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The Far Eastern Review

ENGINEERING + FINANCE + COMMERCE

THE PIONEER IN ITS FIELD

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and Advancement of Trade in Far Eastern Countries.

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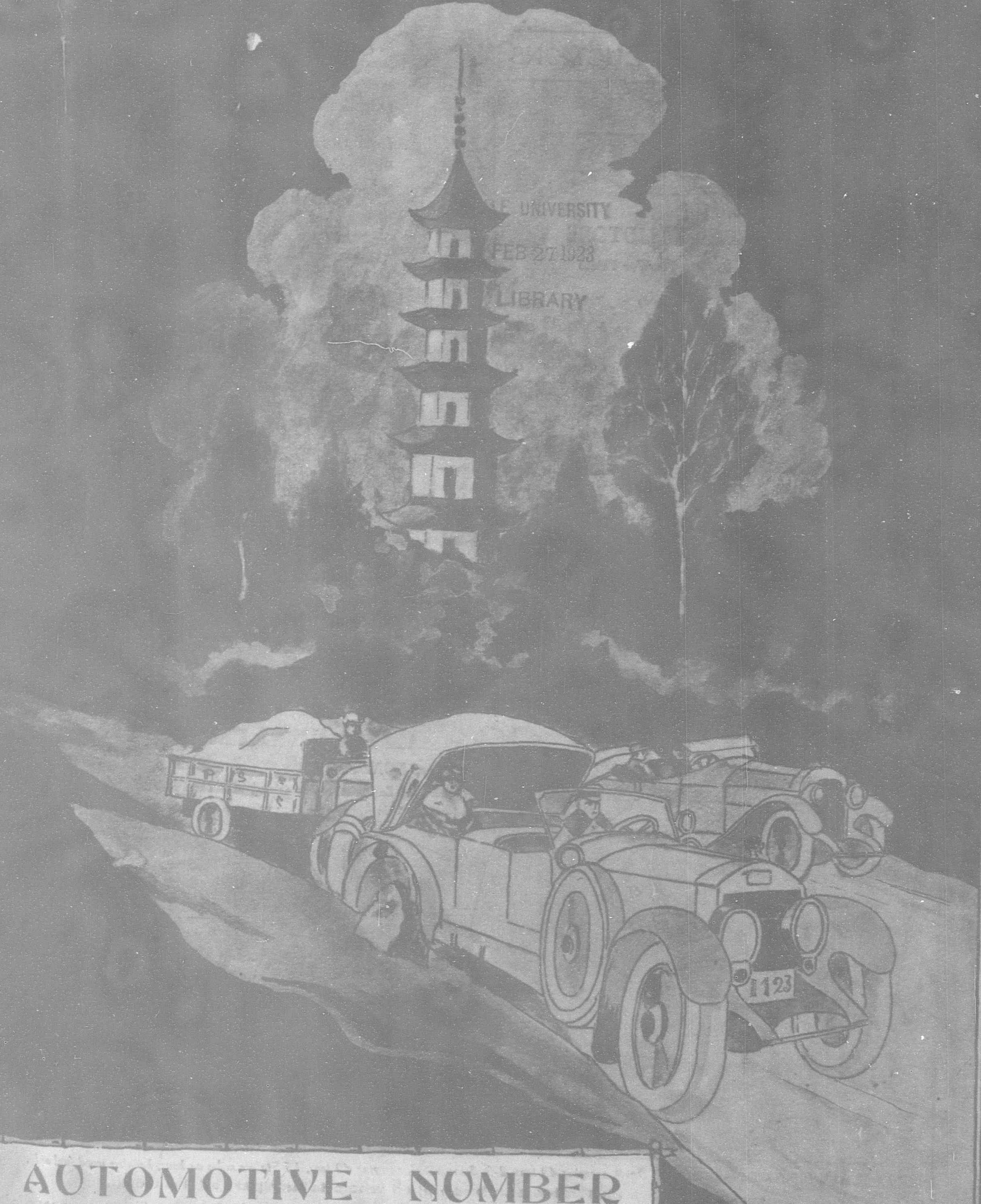

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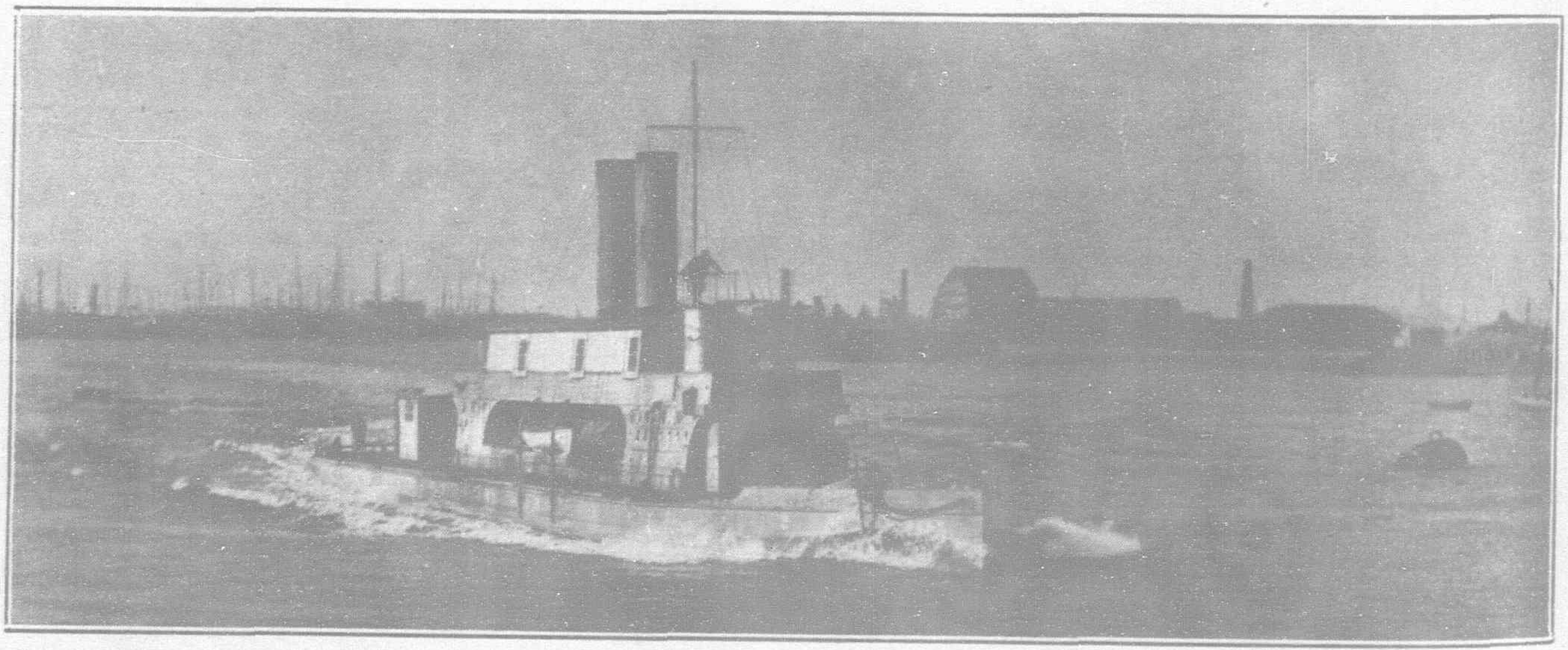

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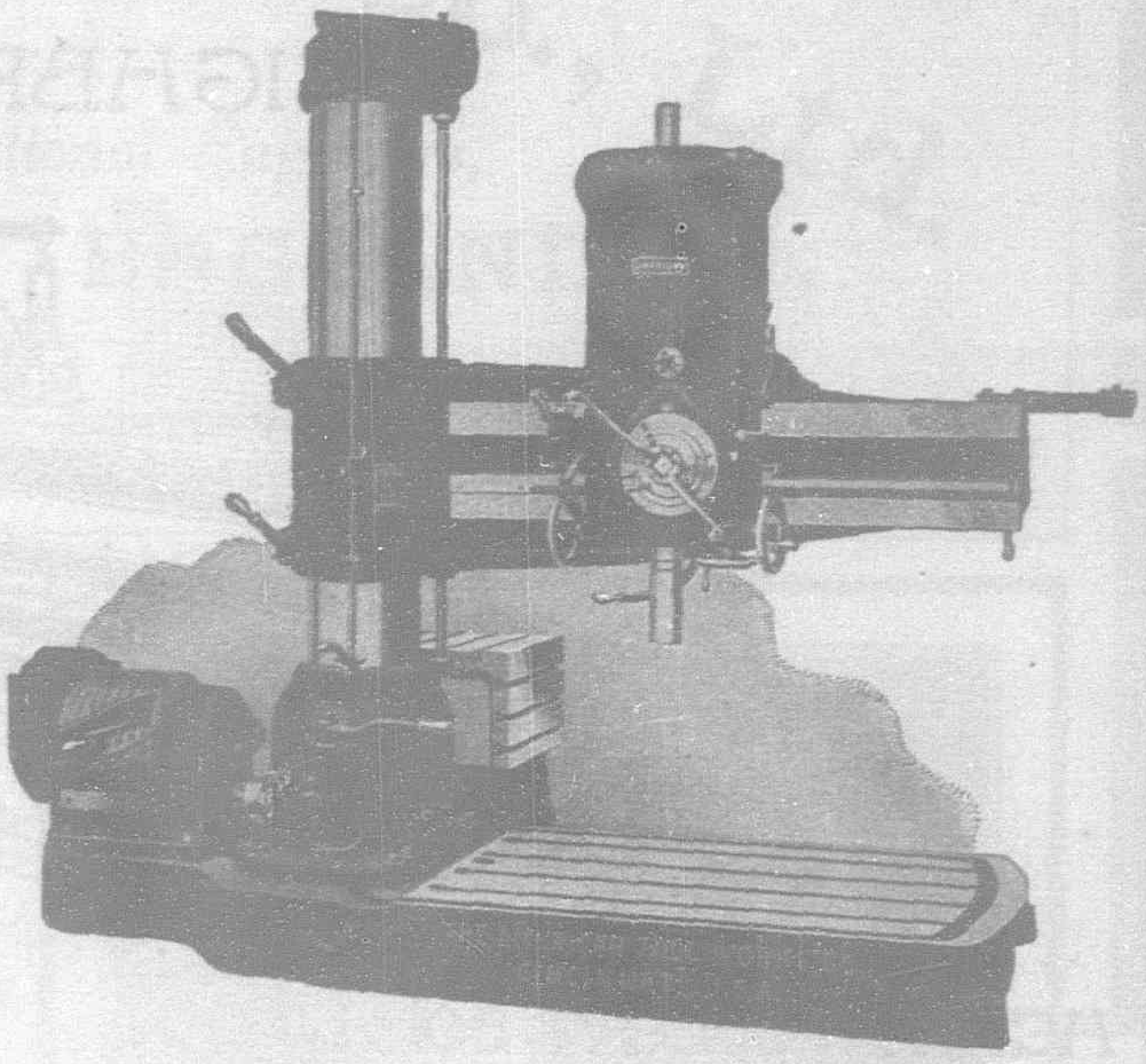

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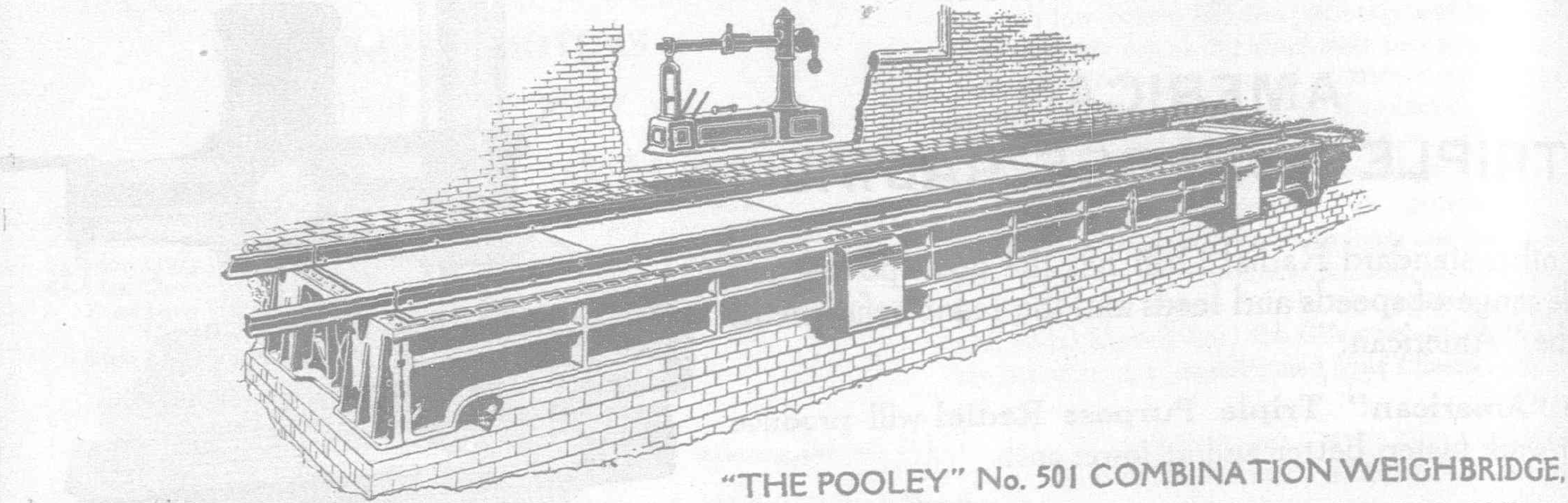

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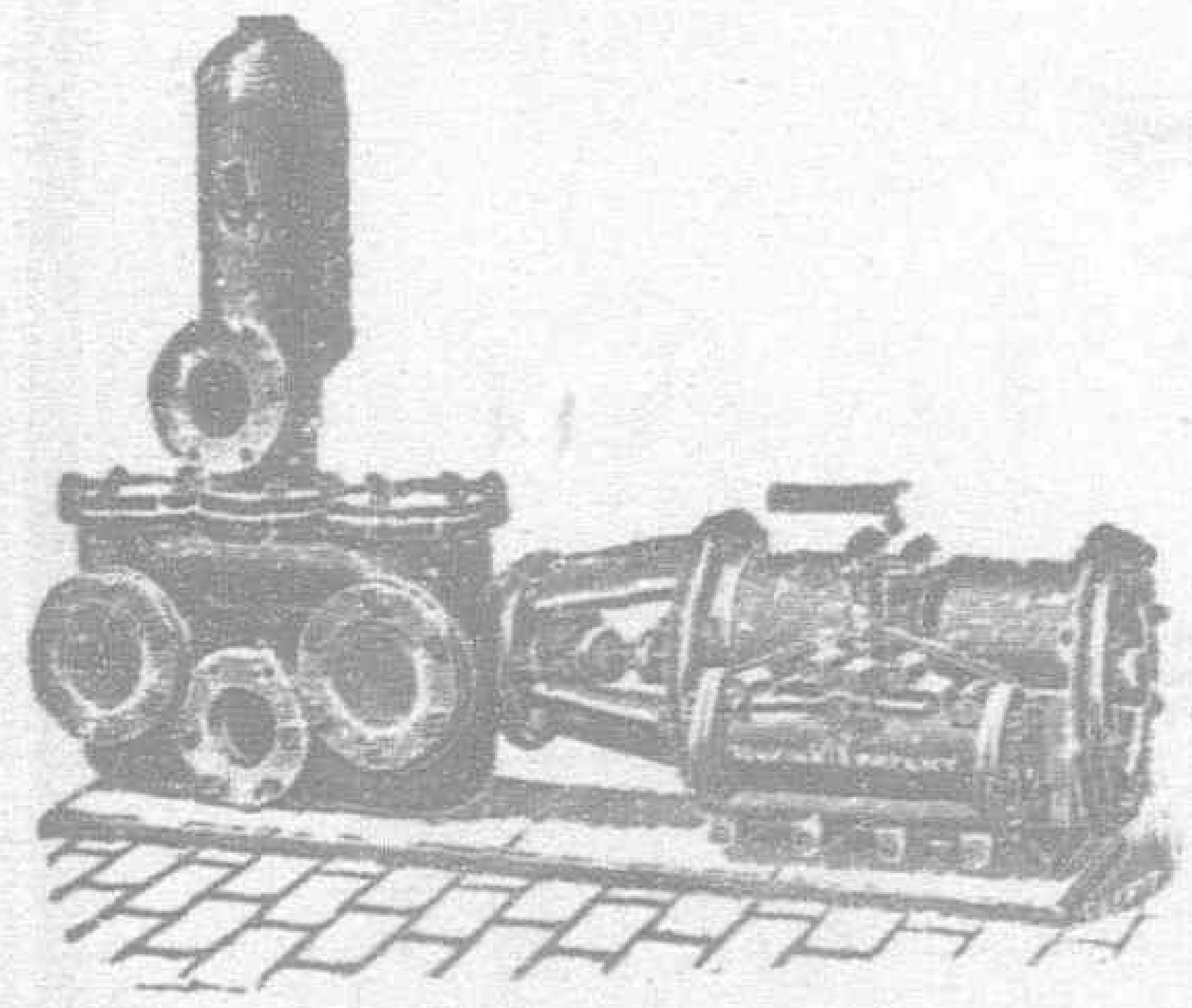

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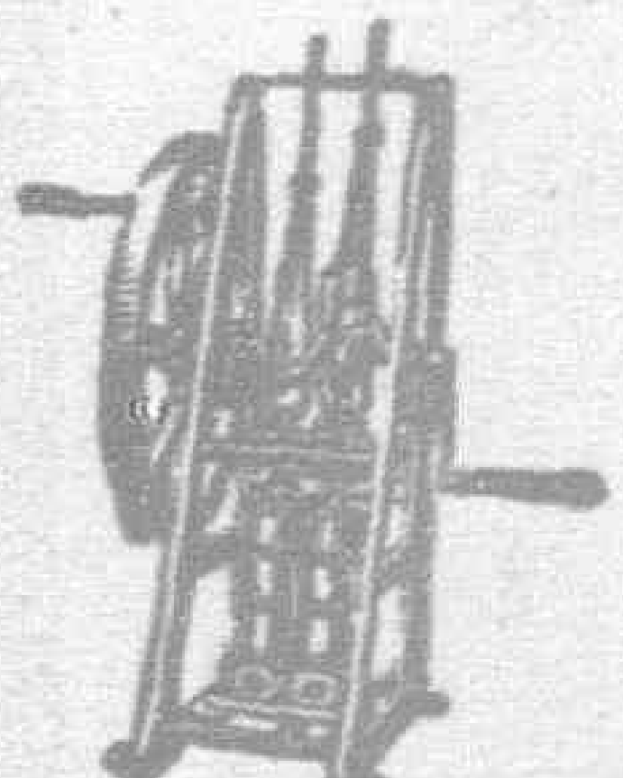

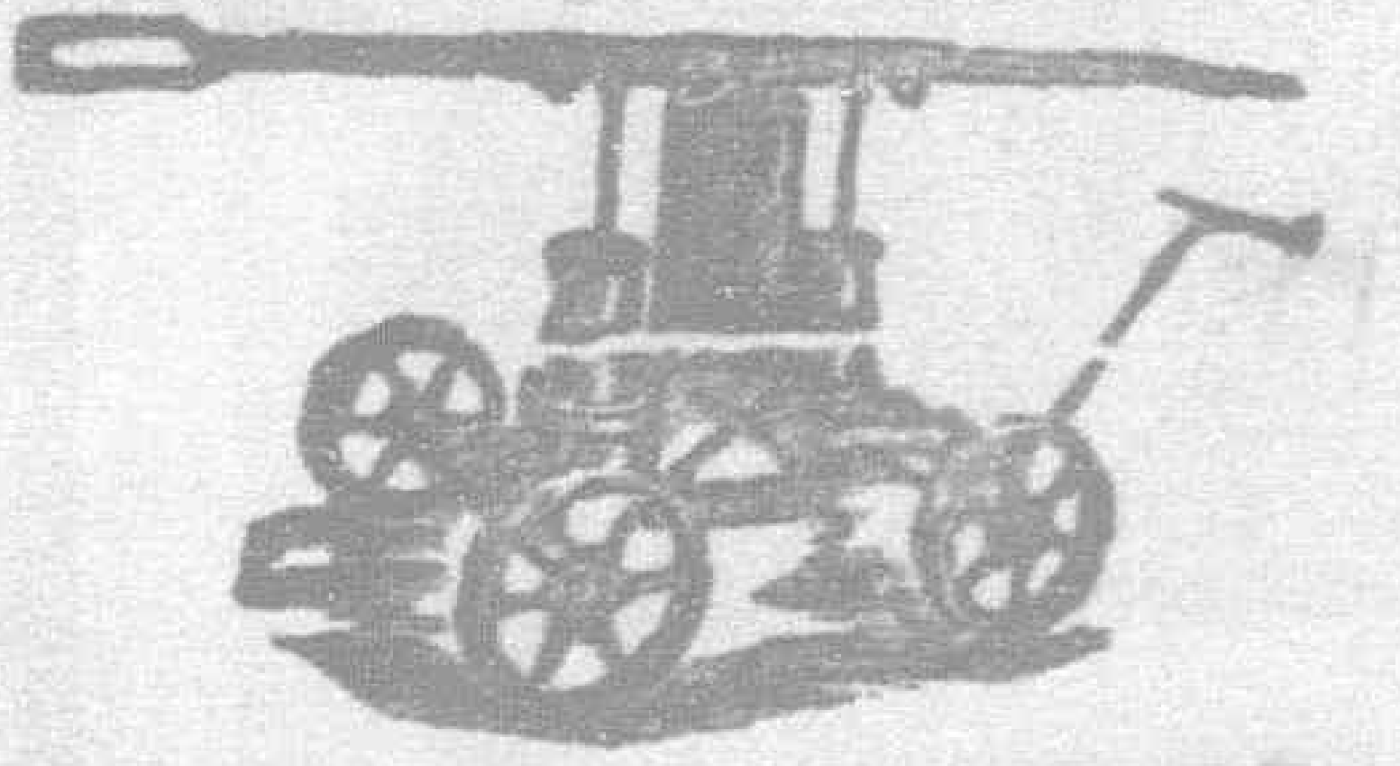

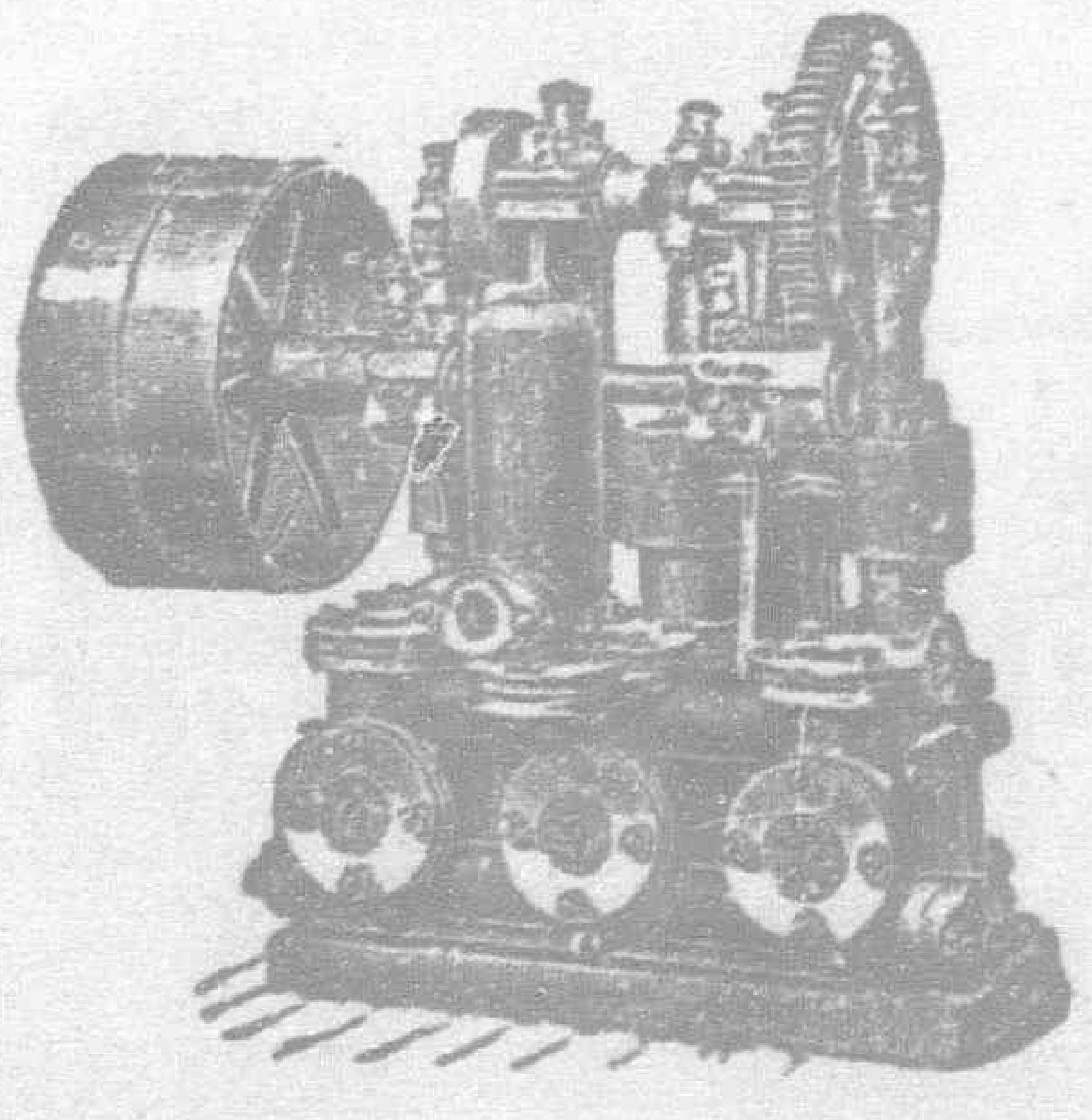

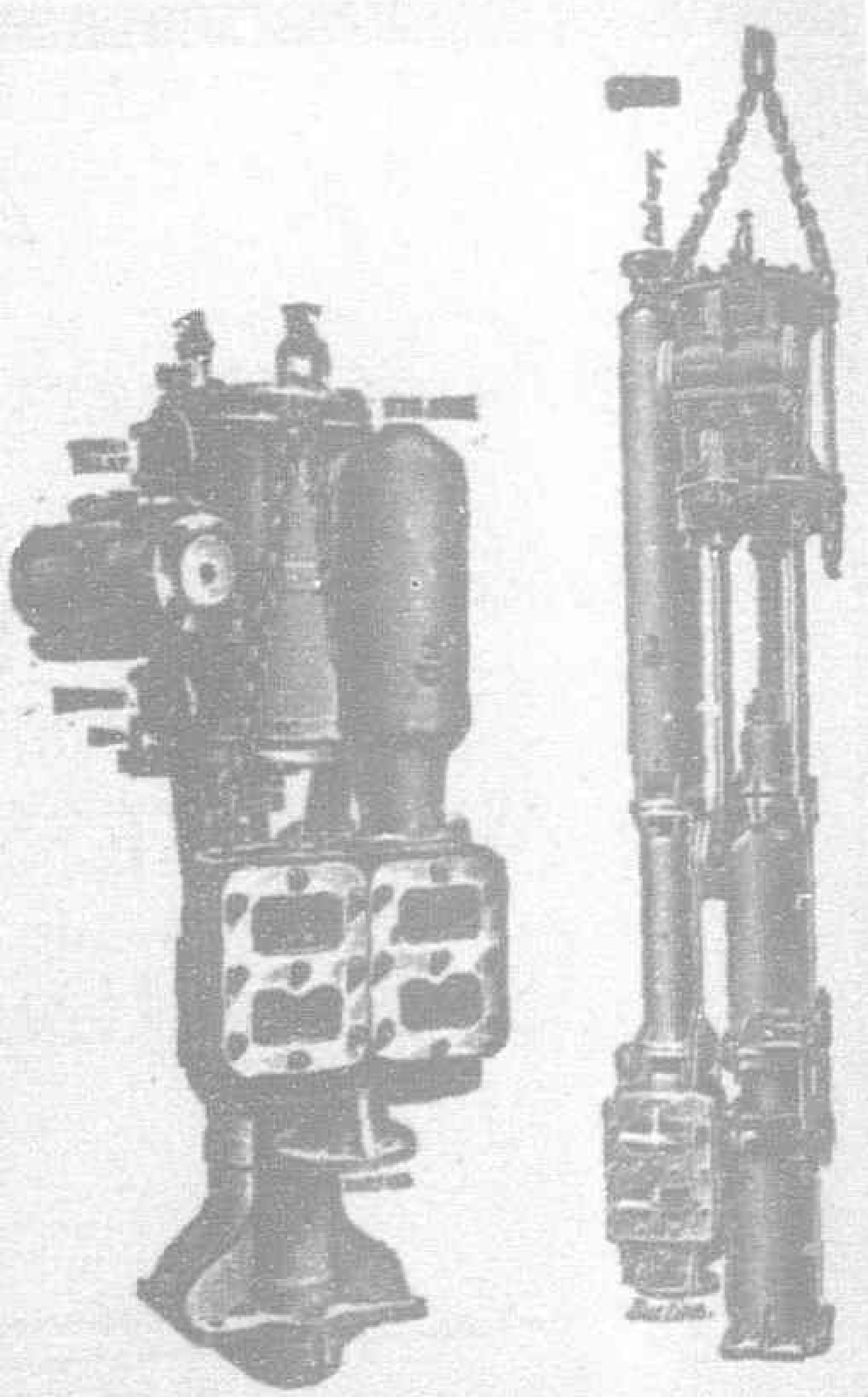

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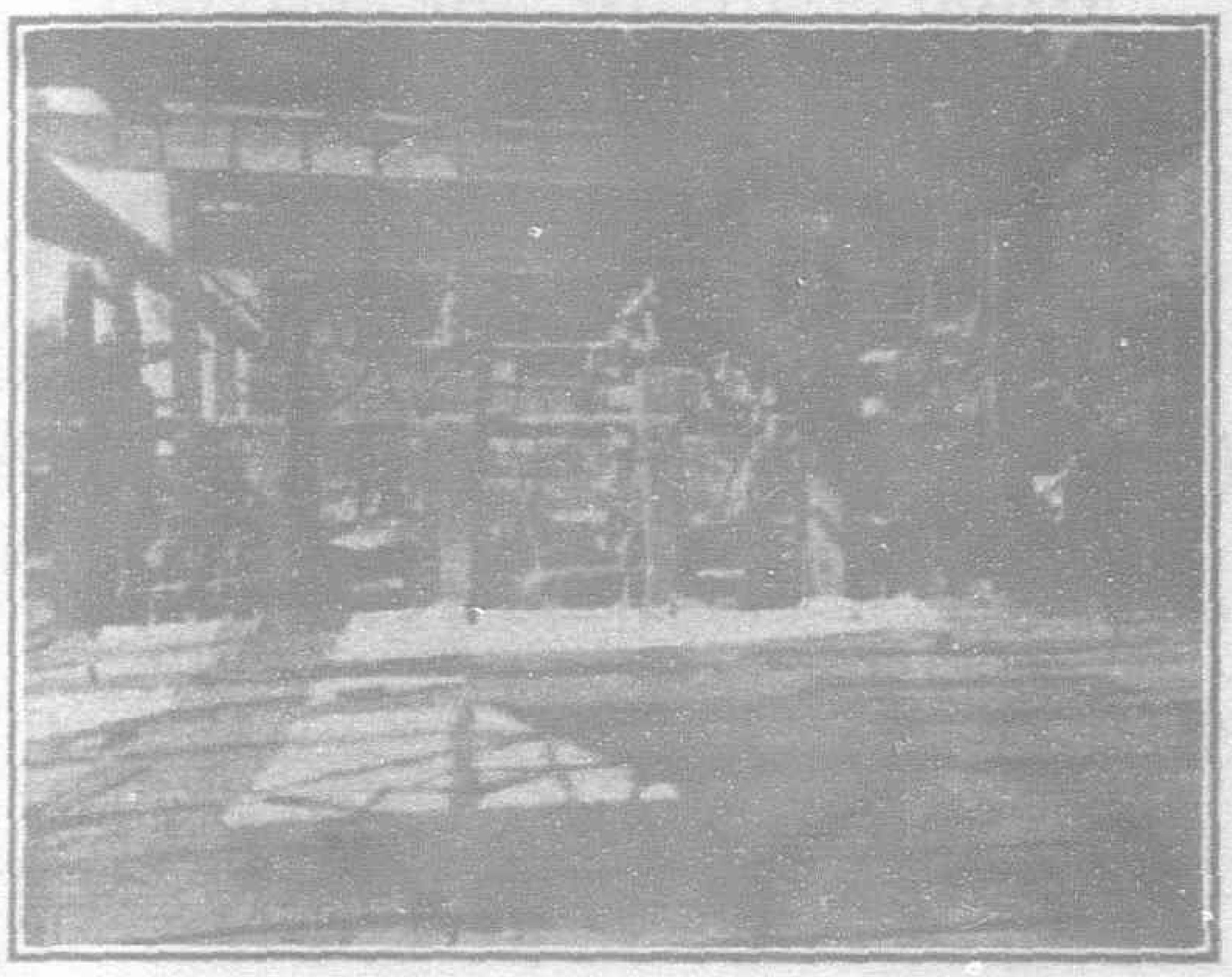

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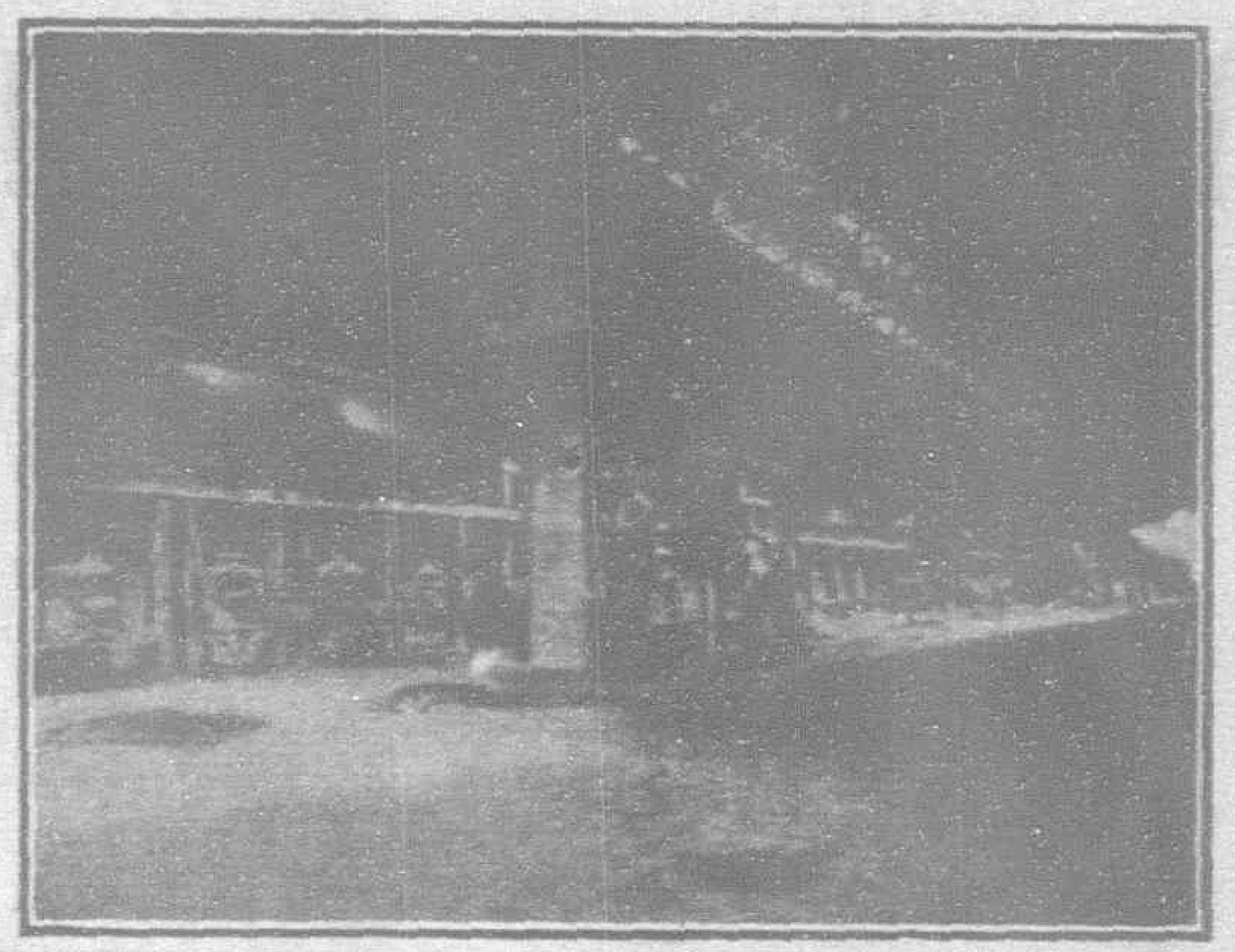

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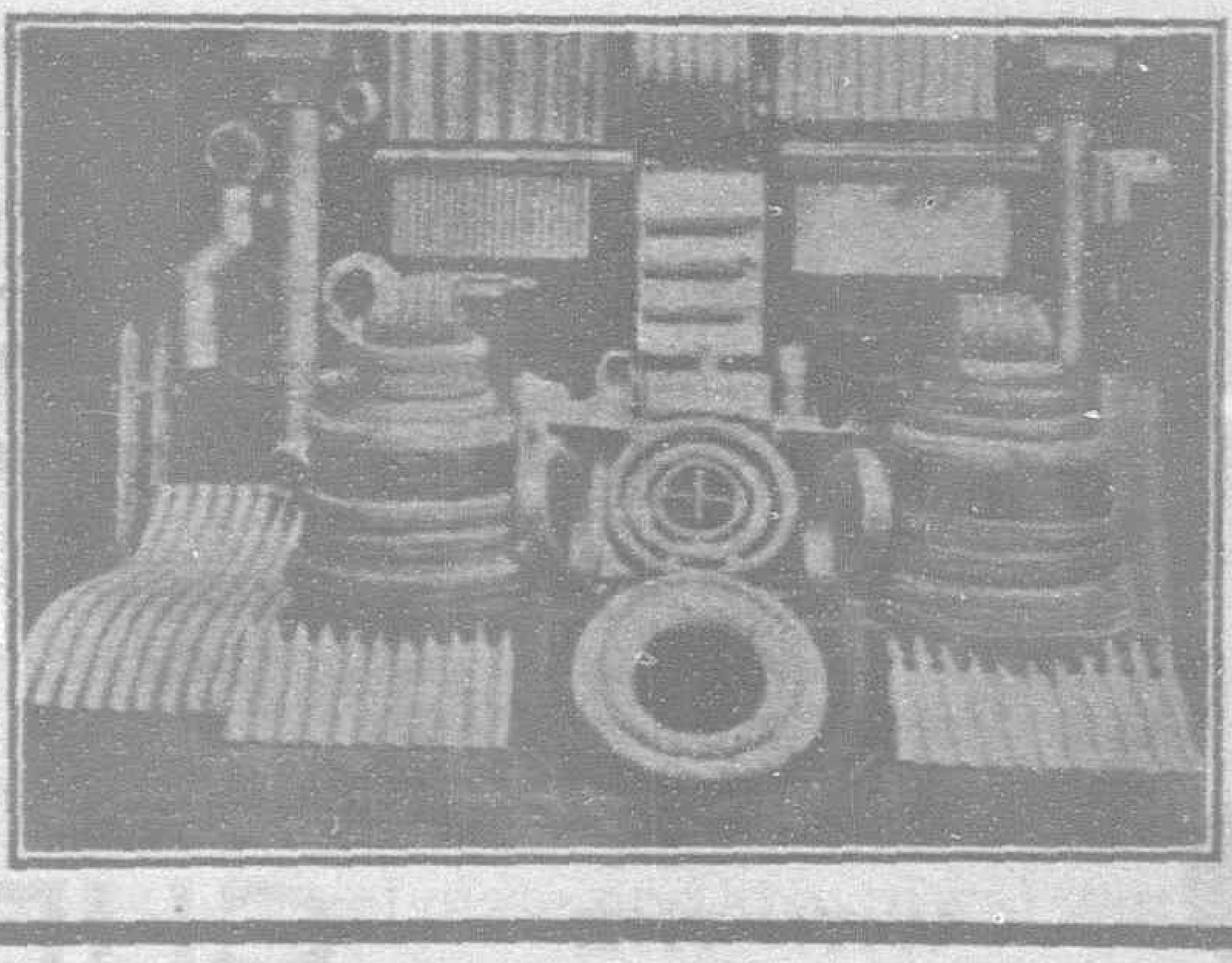

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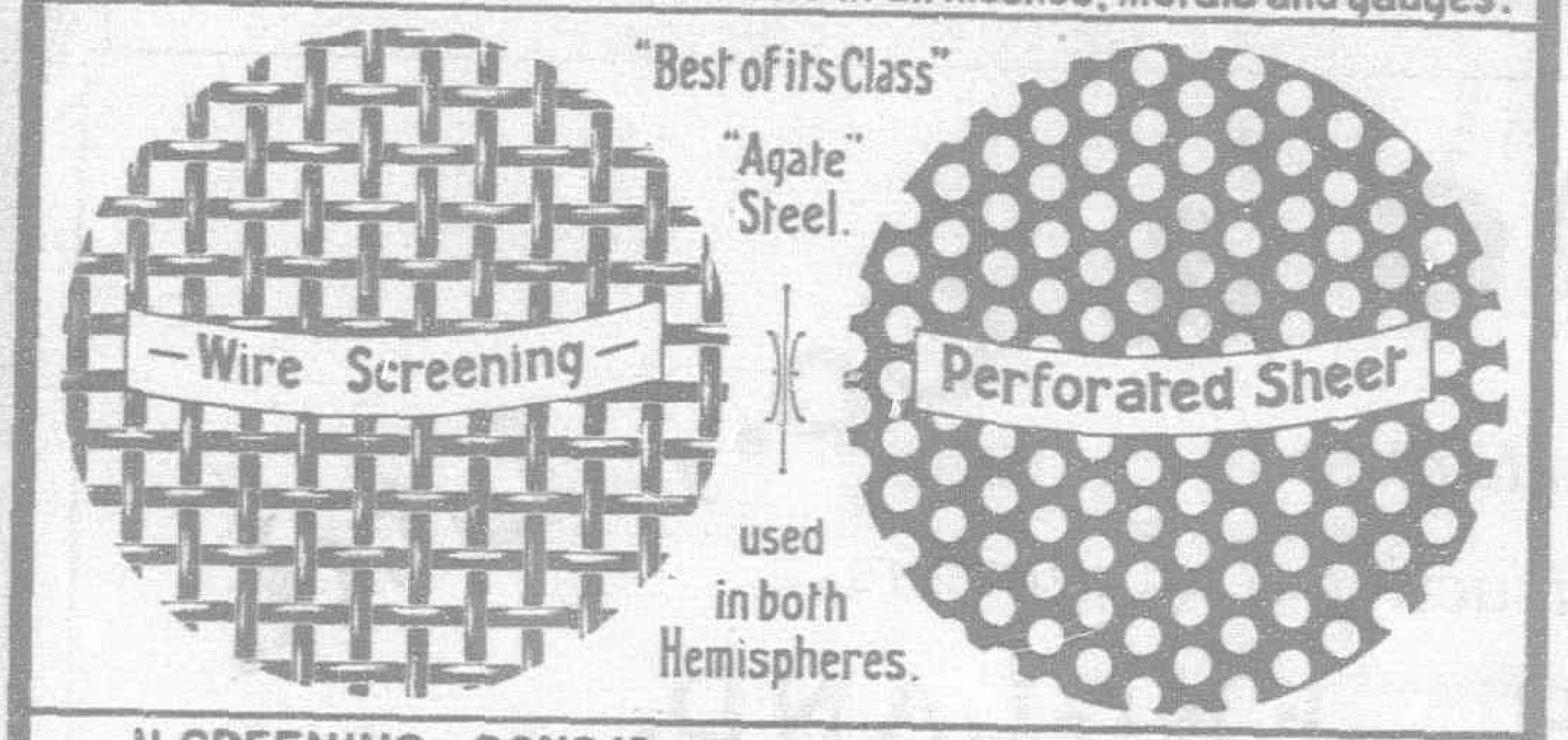

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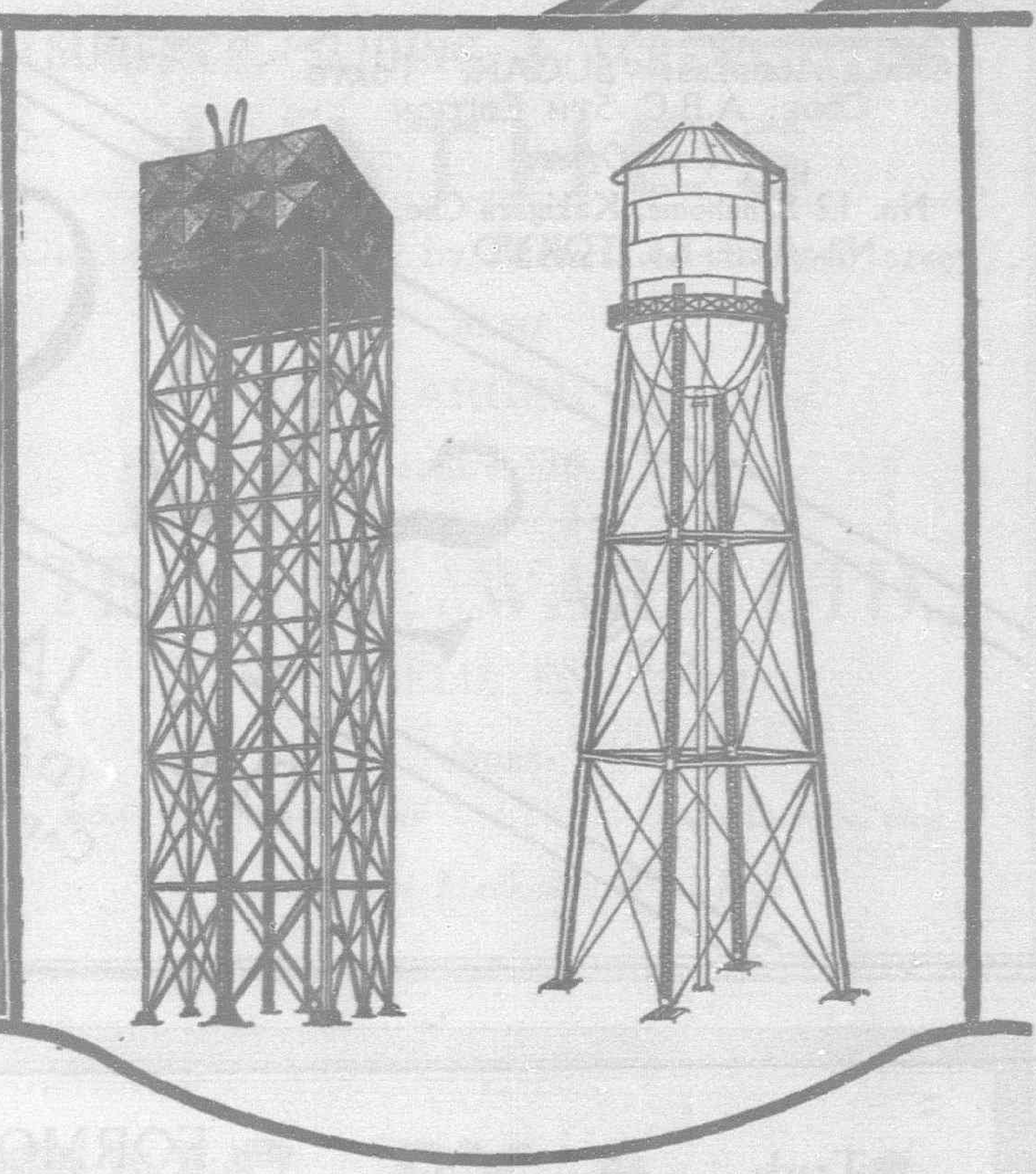

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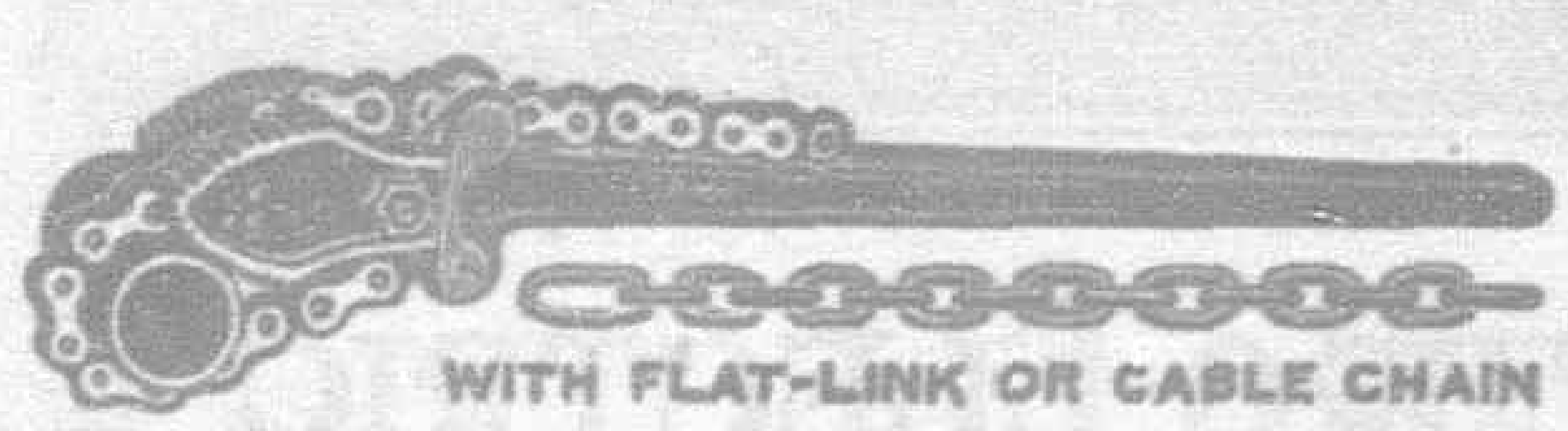
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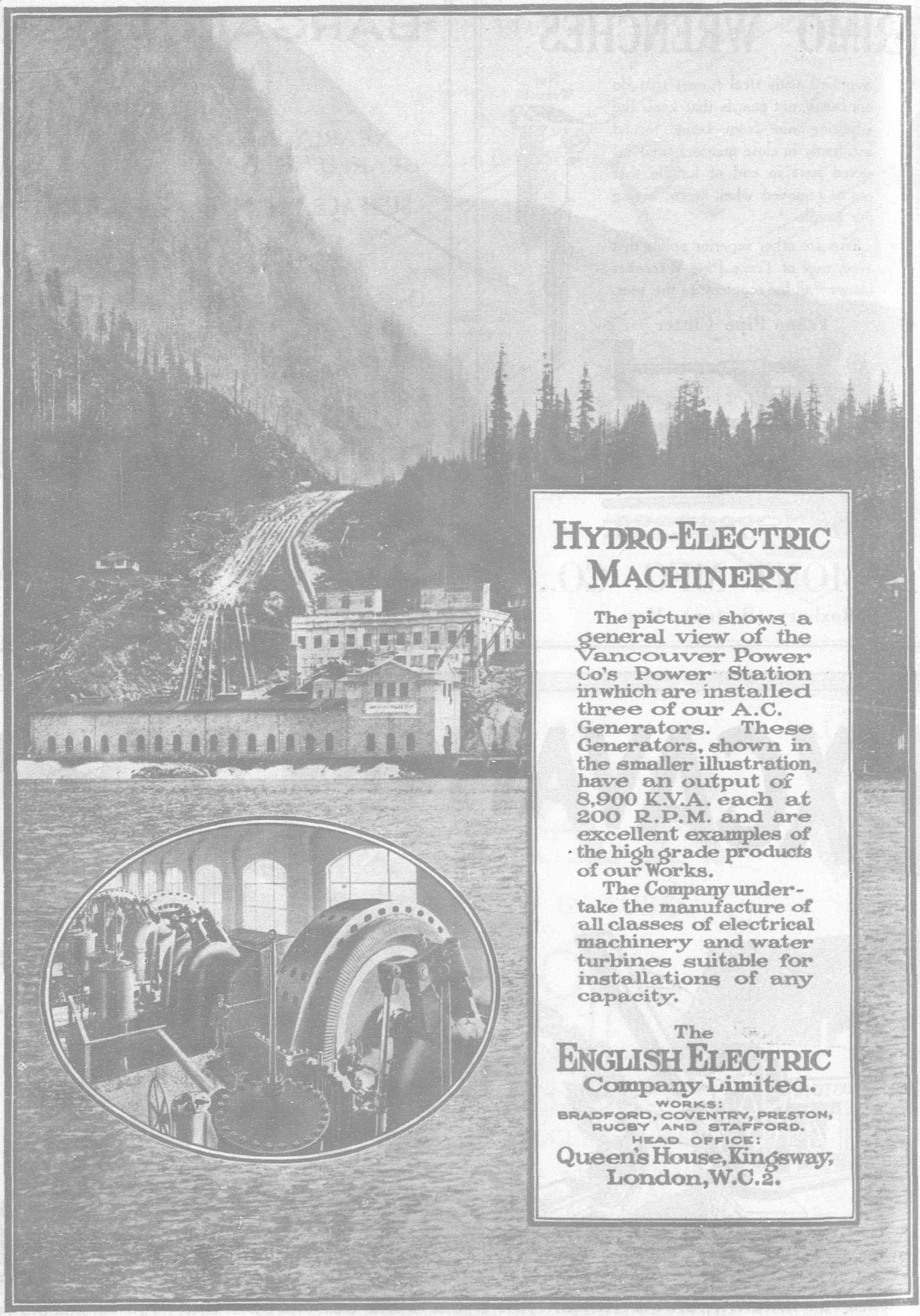

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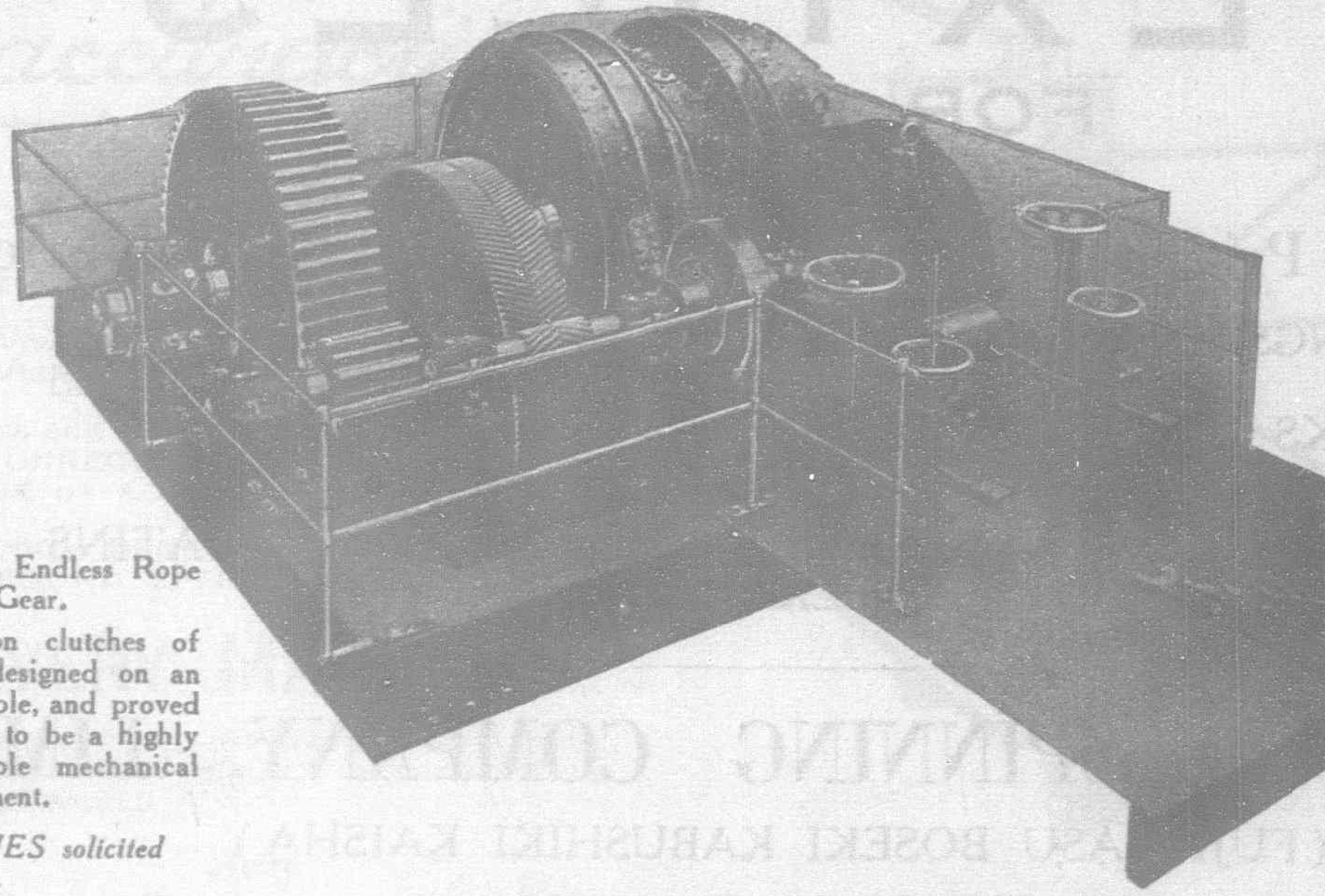

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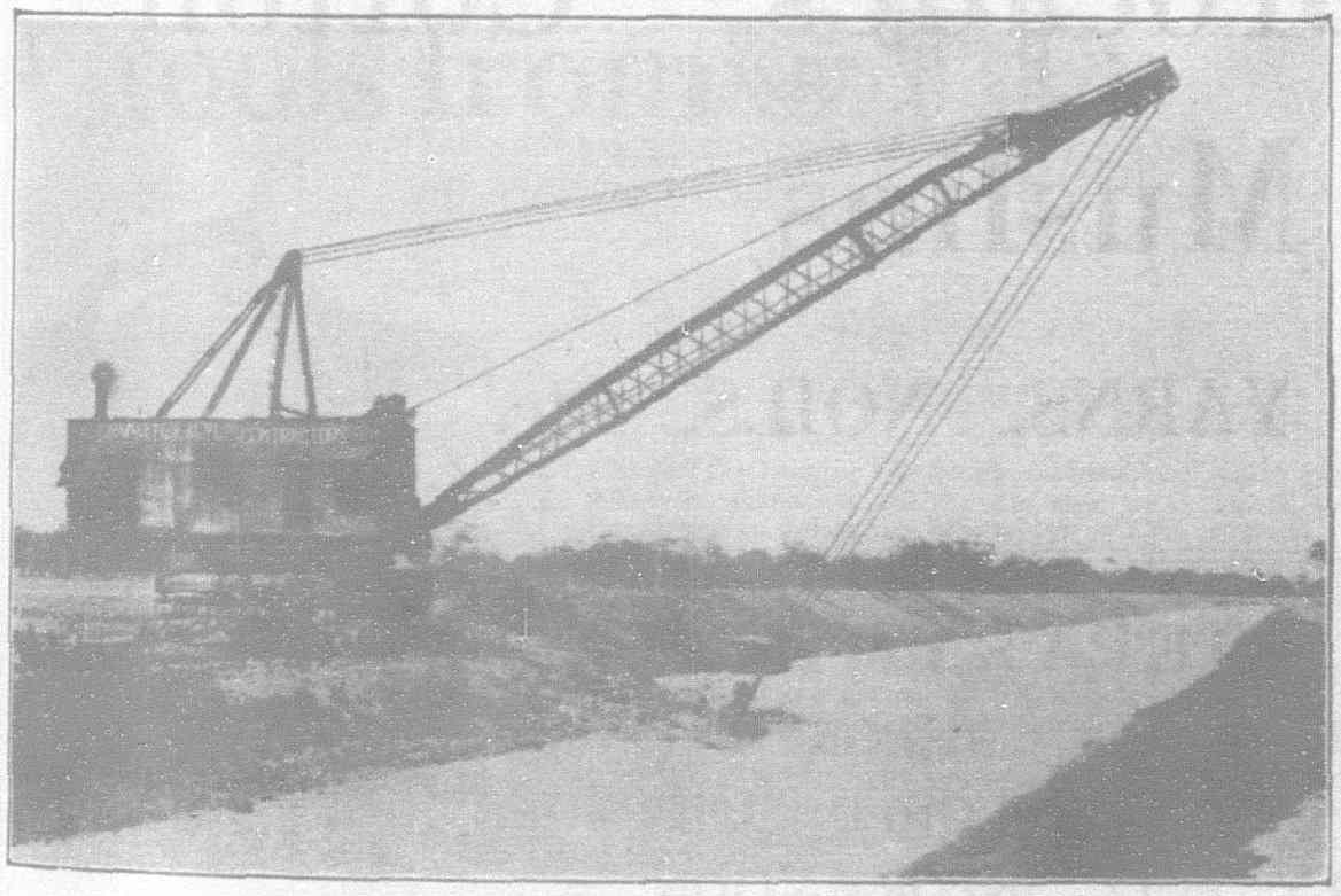

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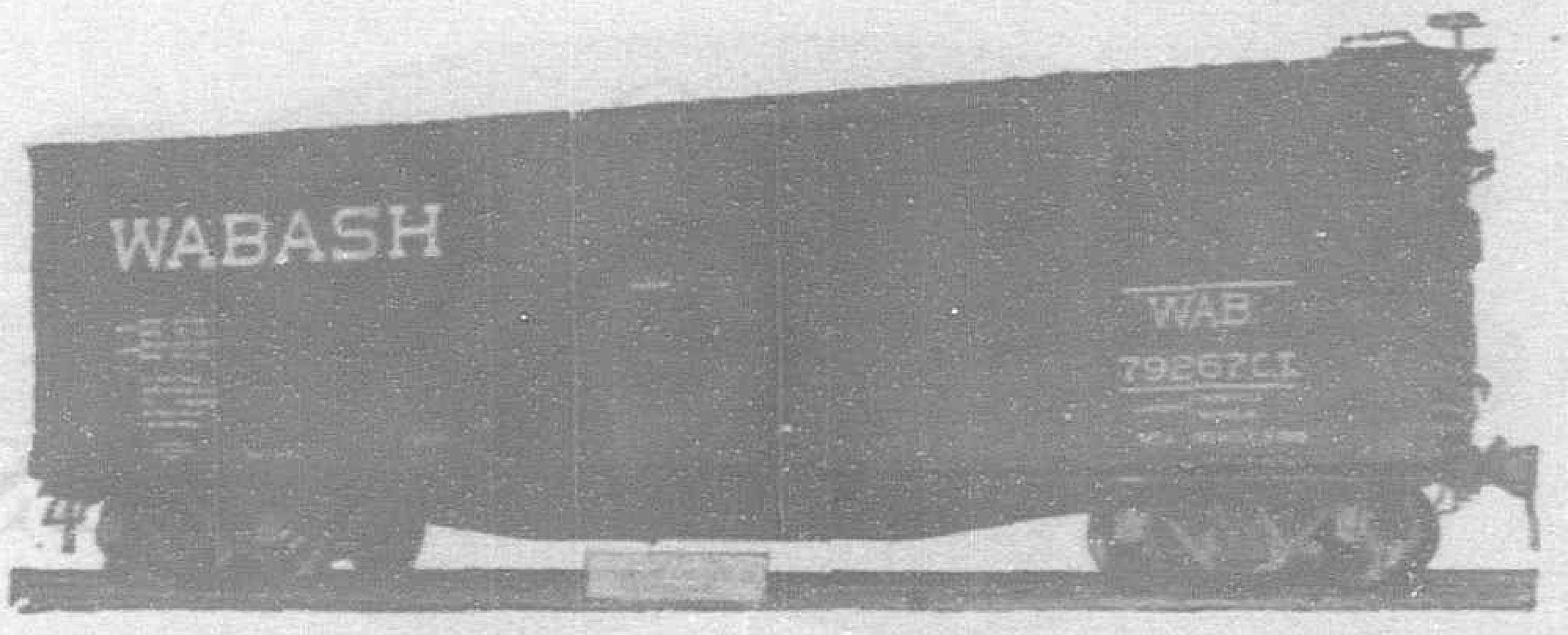

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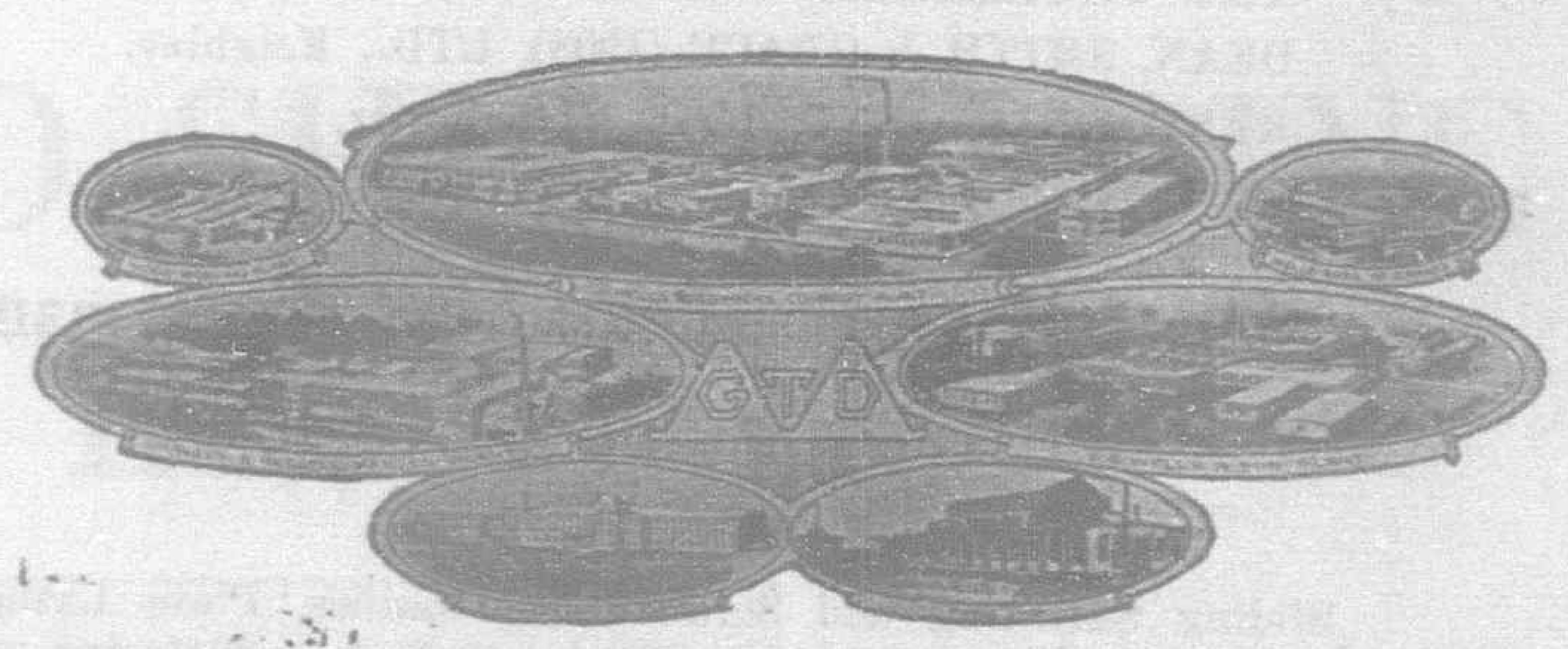

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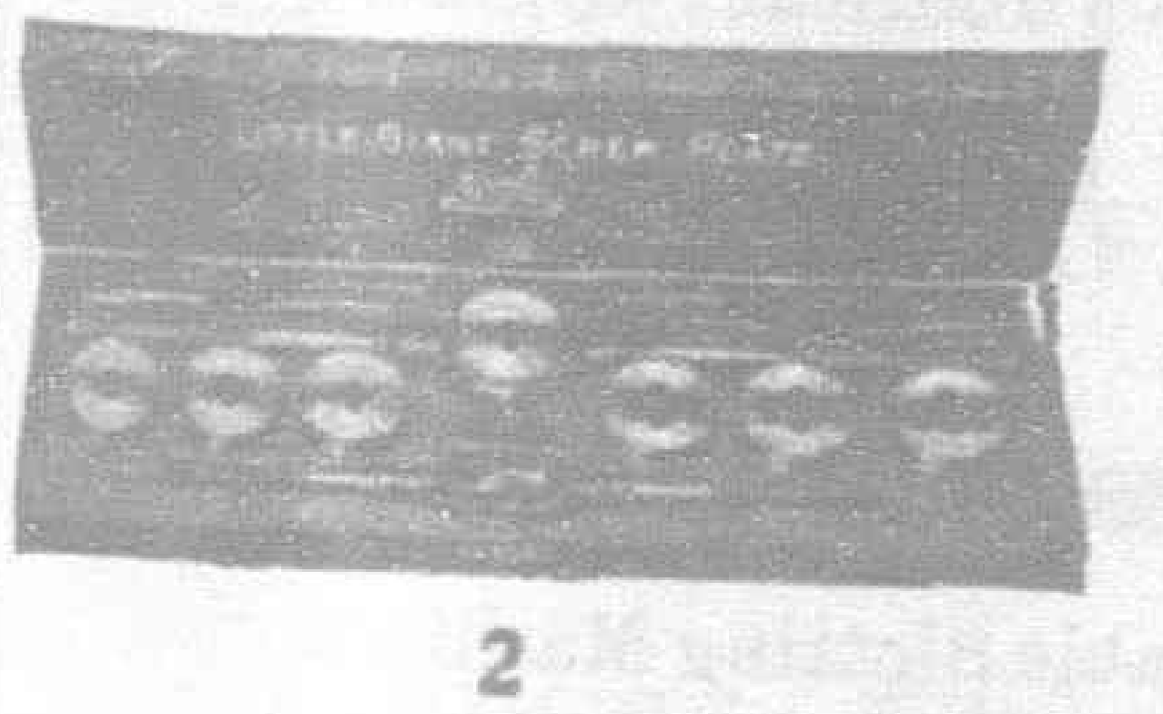

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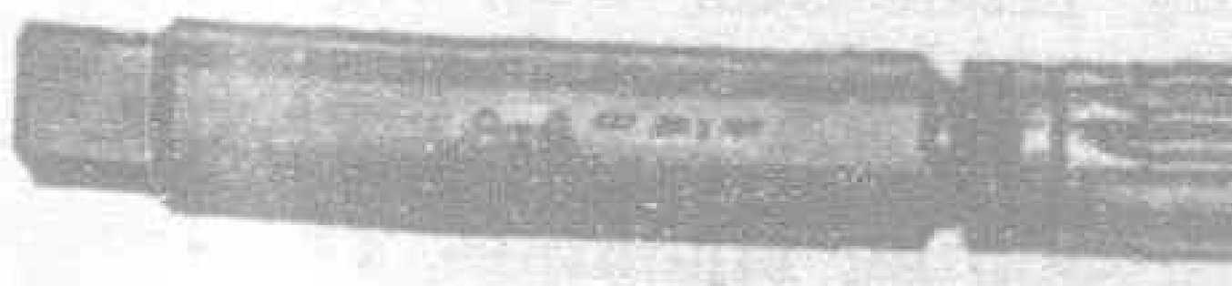

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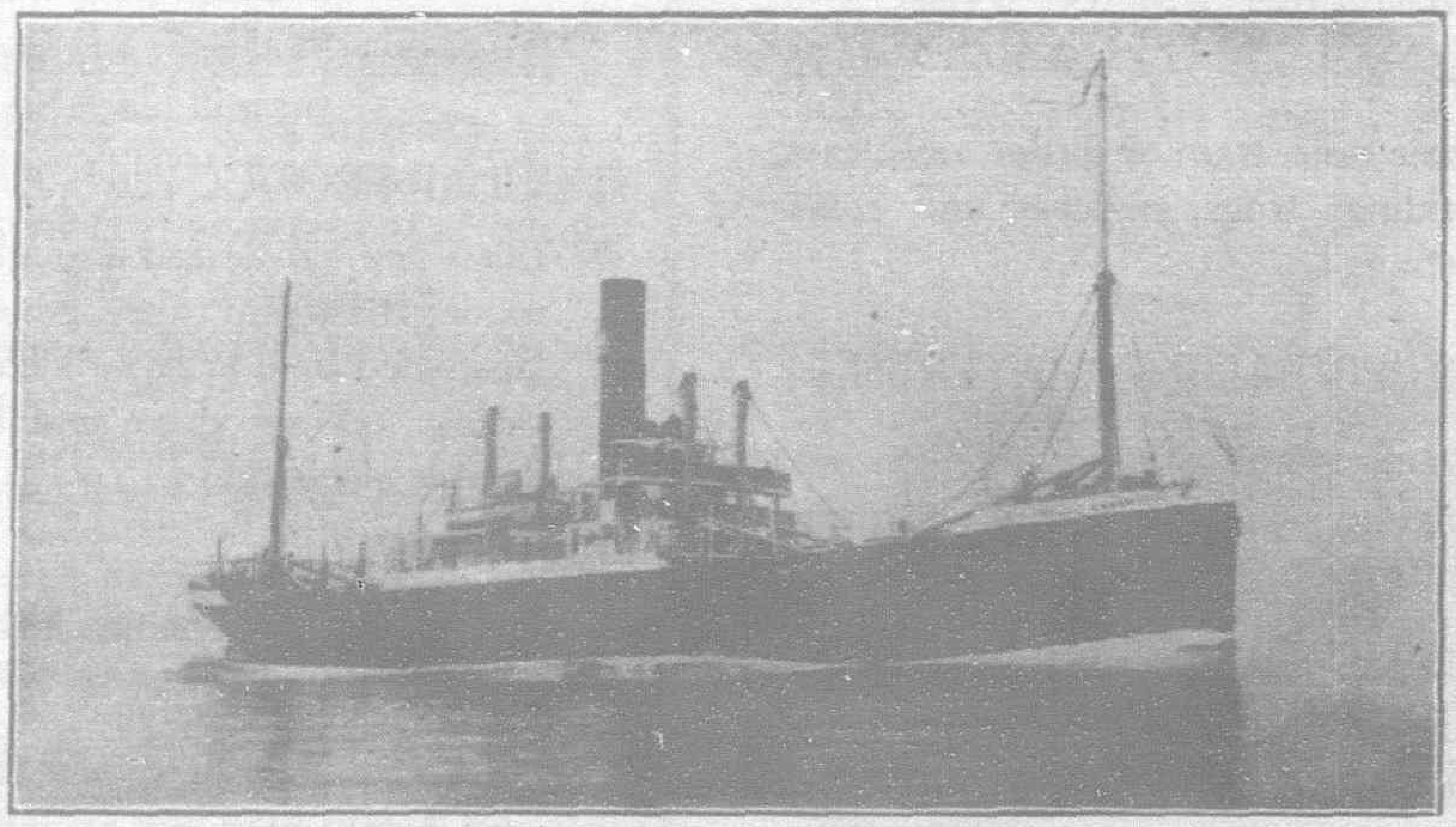

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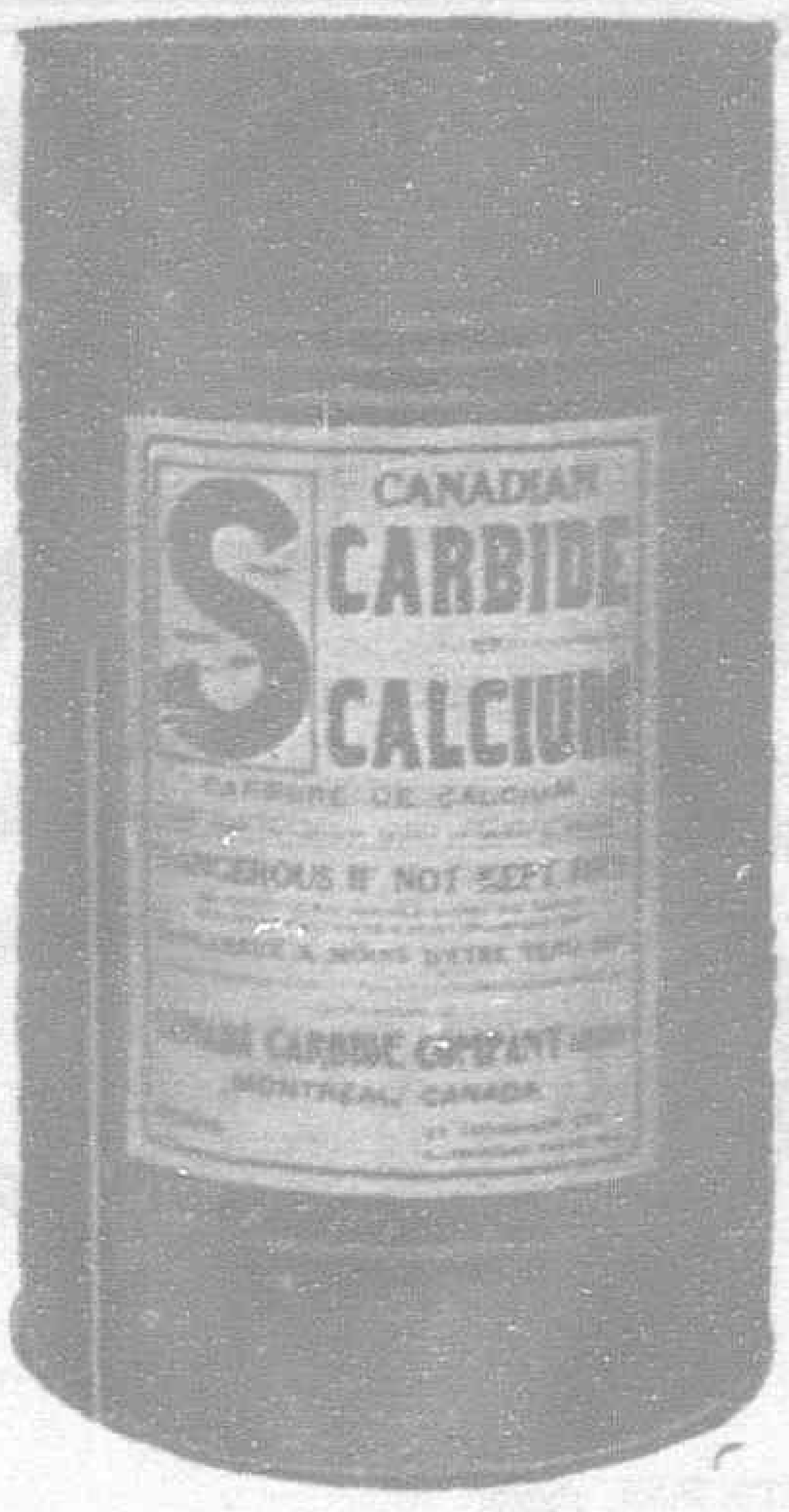

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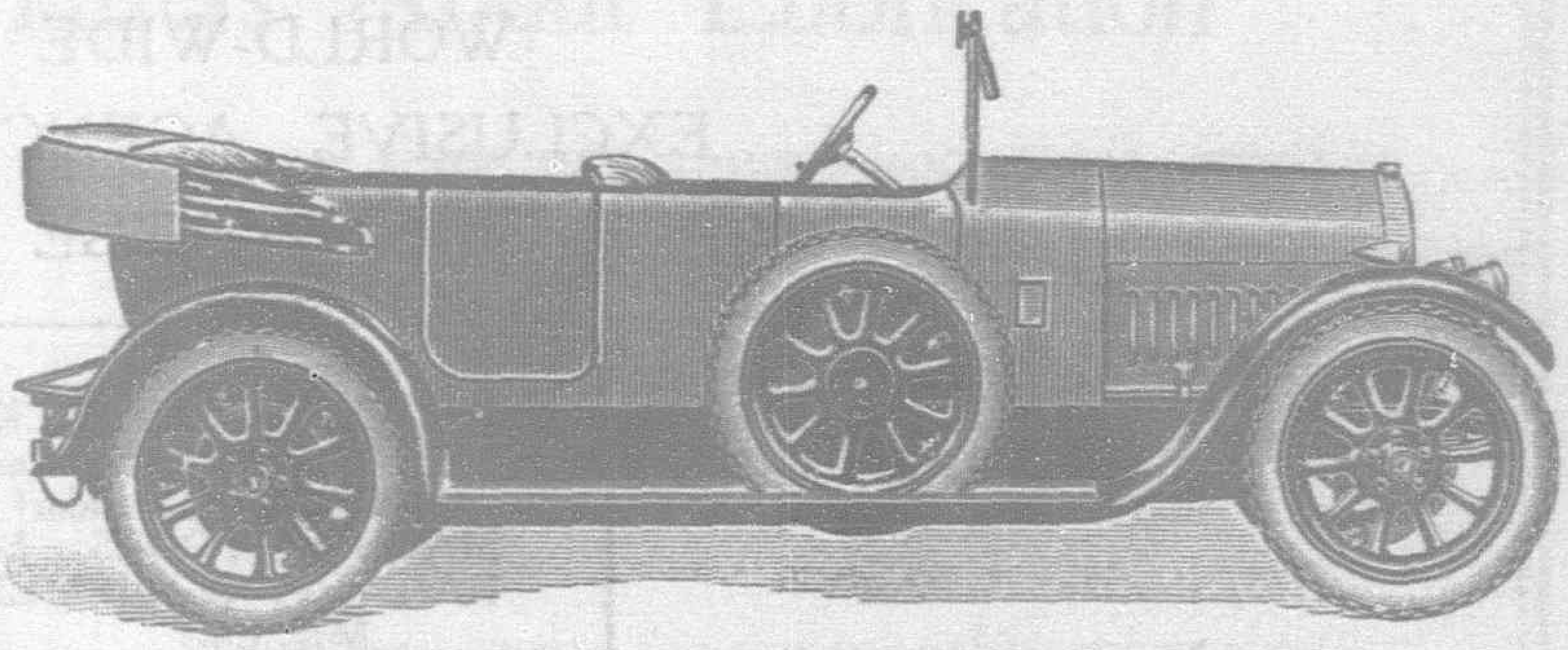

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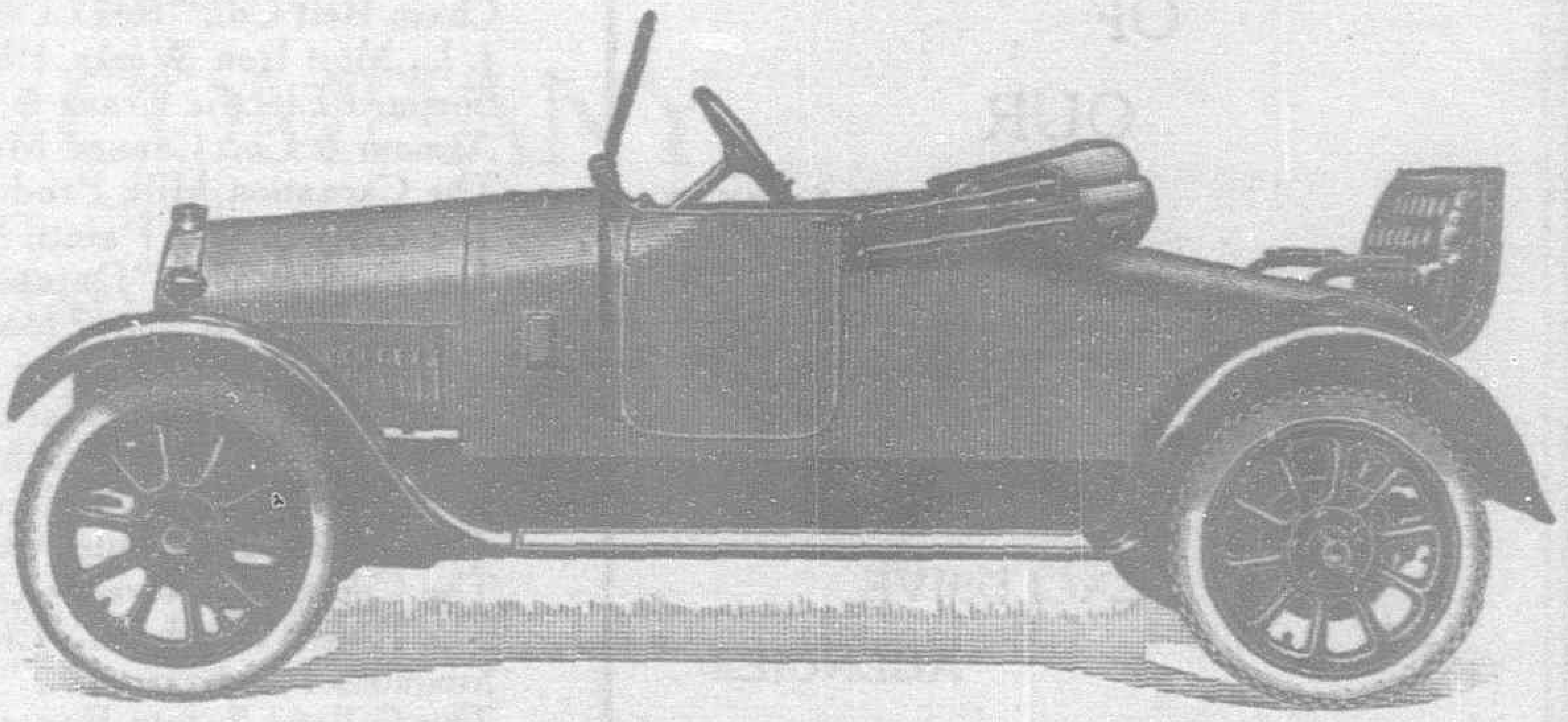

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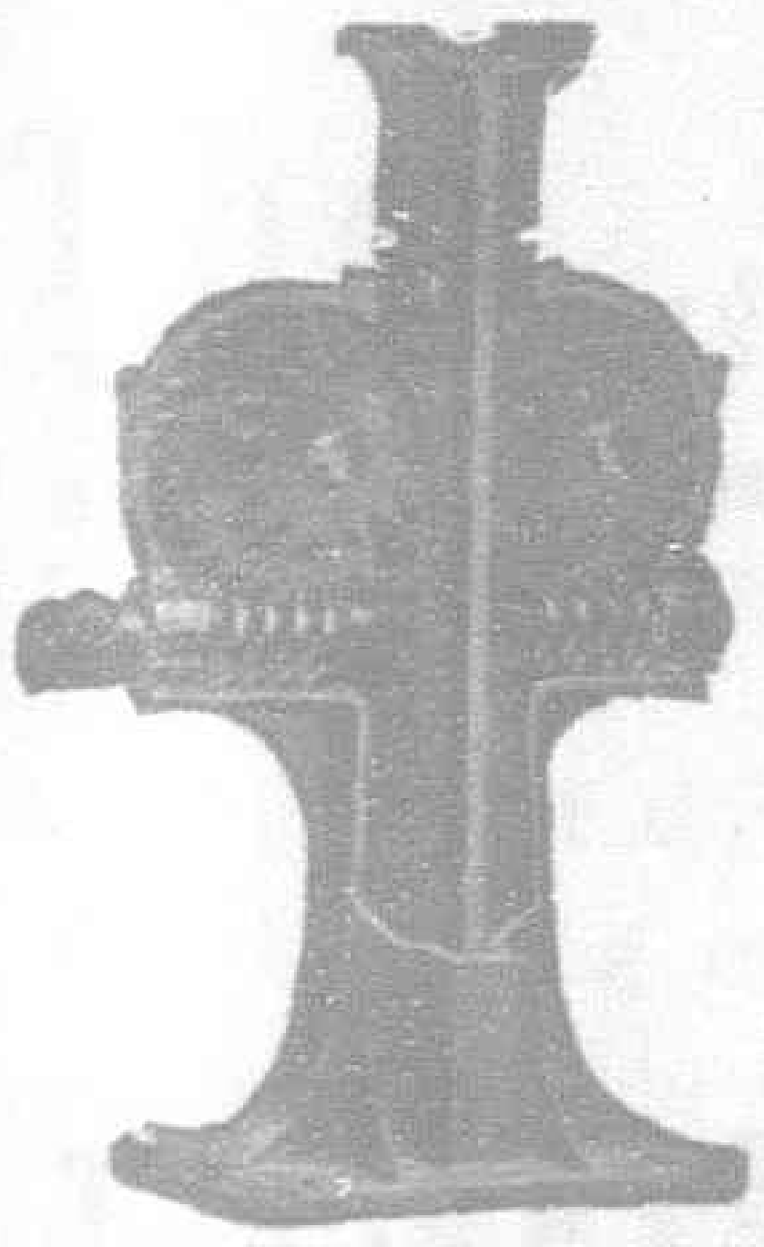

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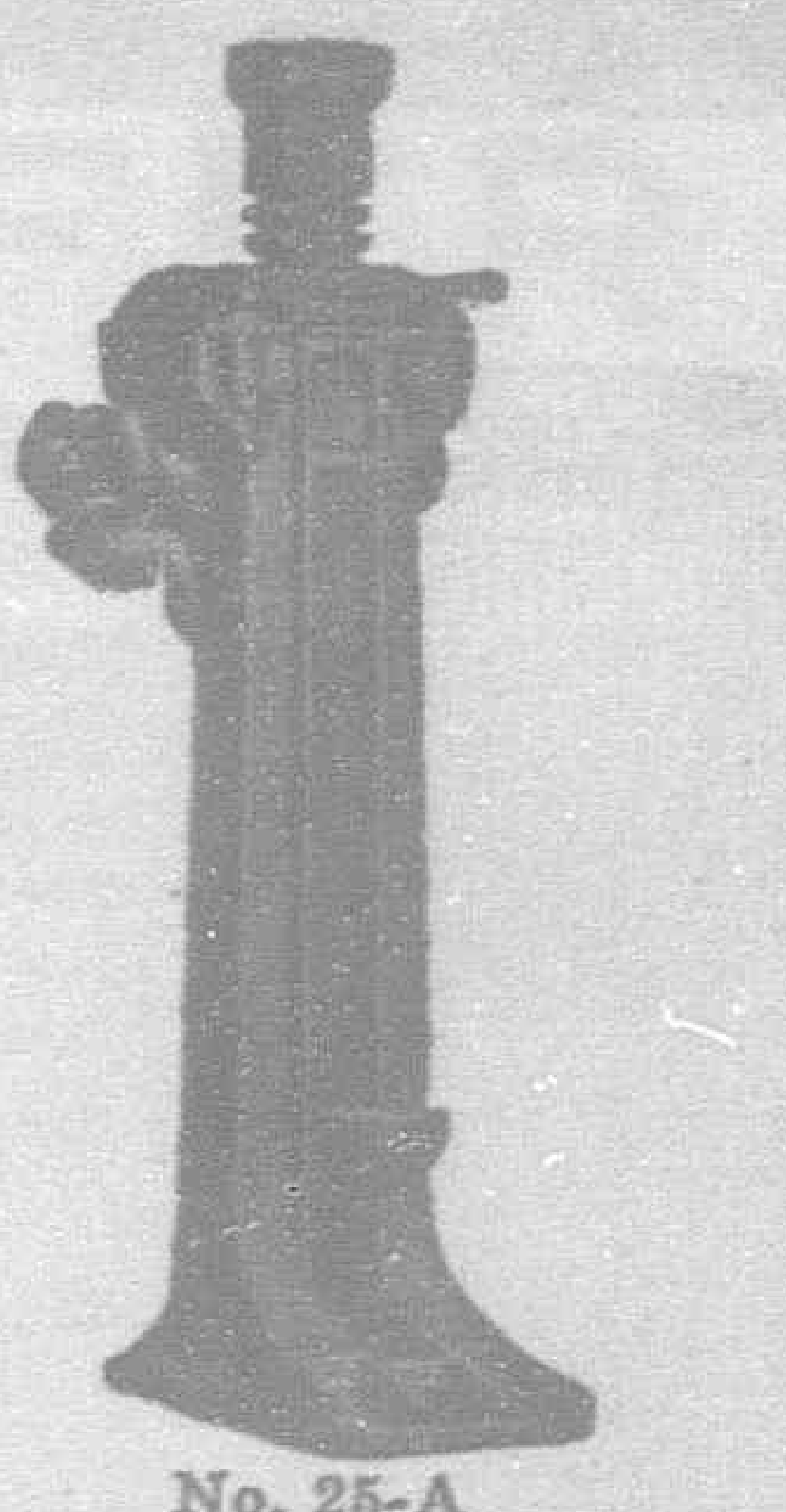

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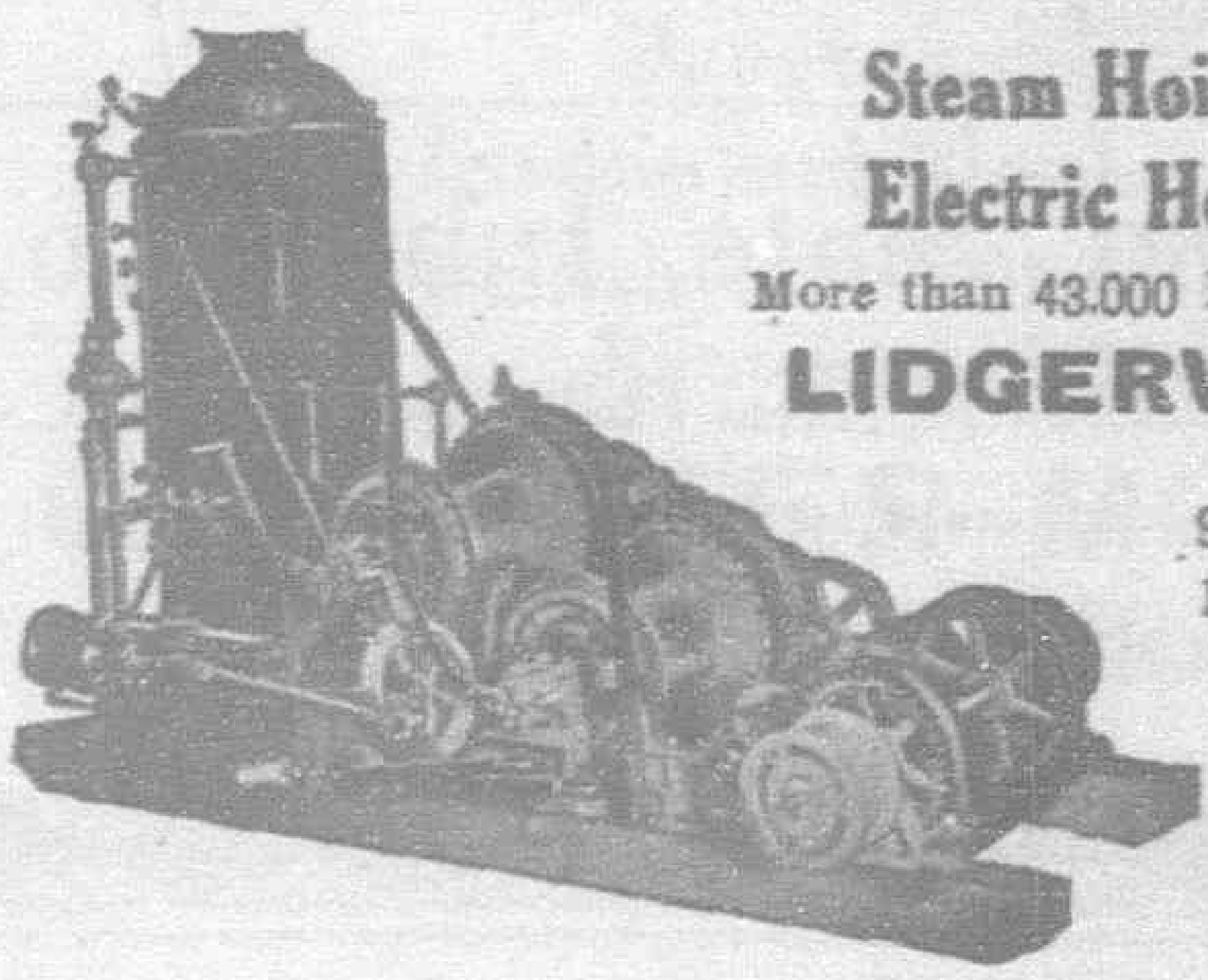

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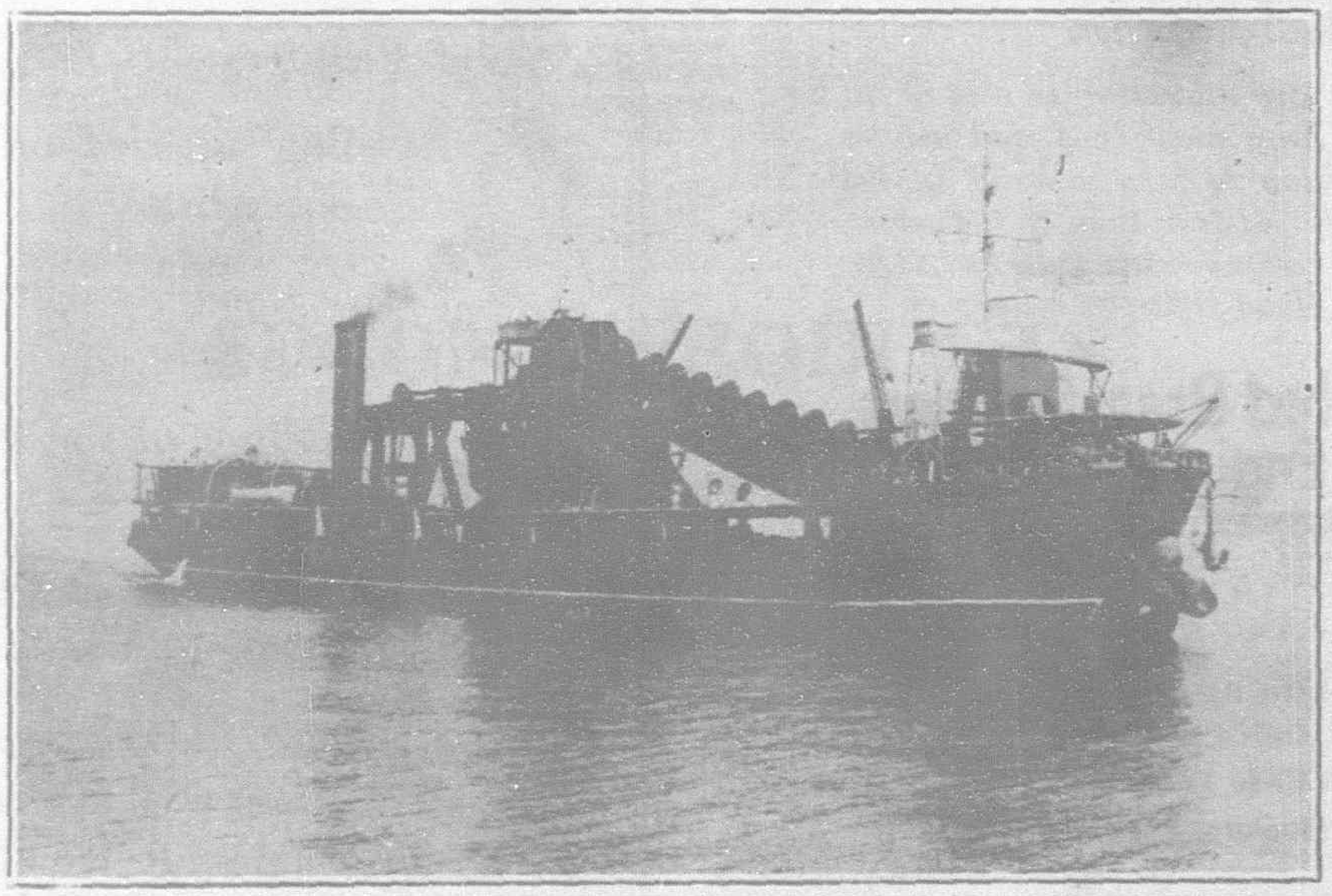

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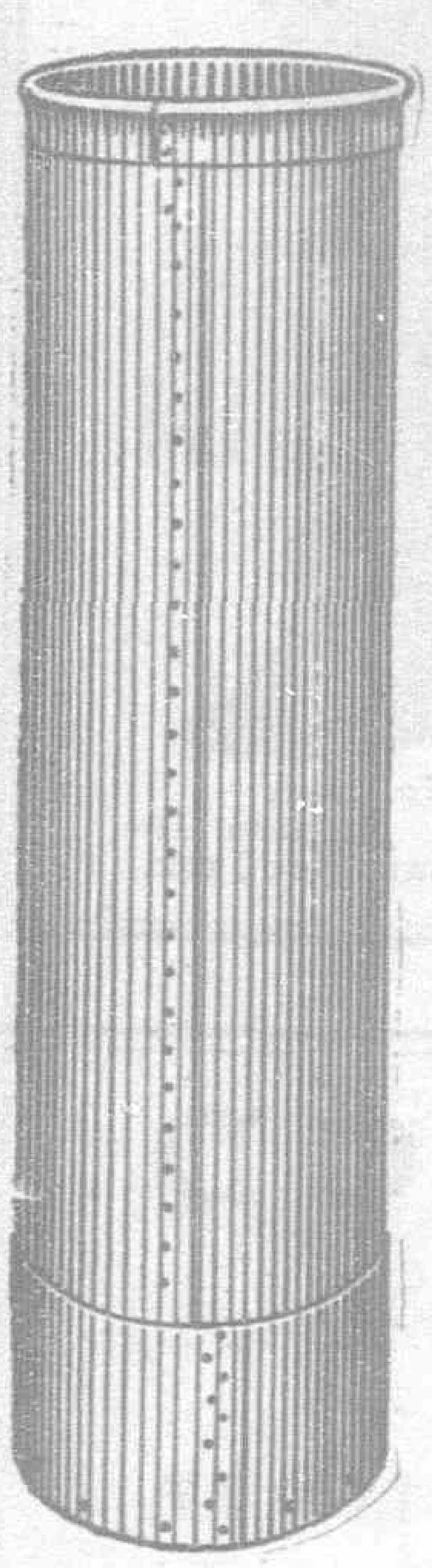

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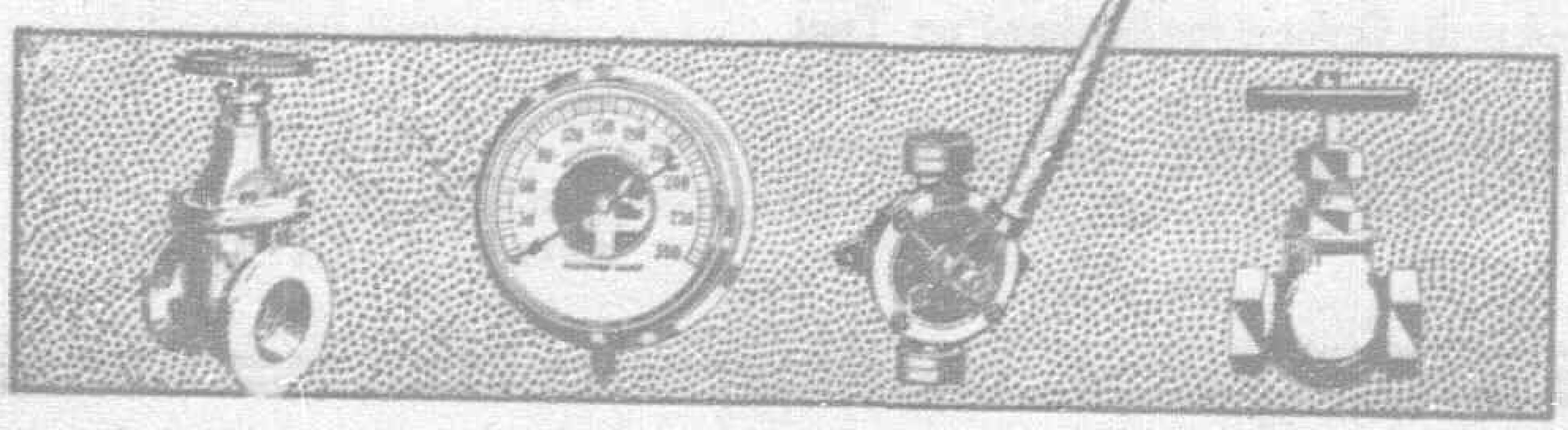

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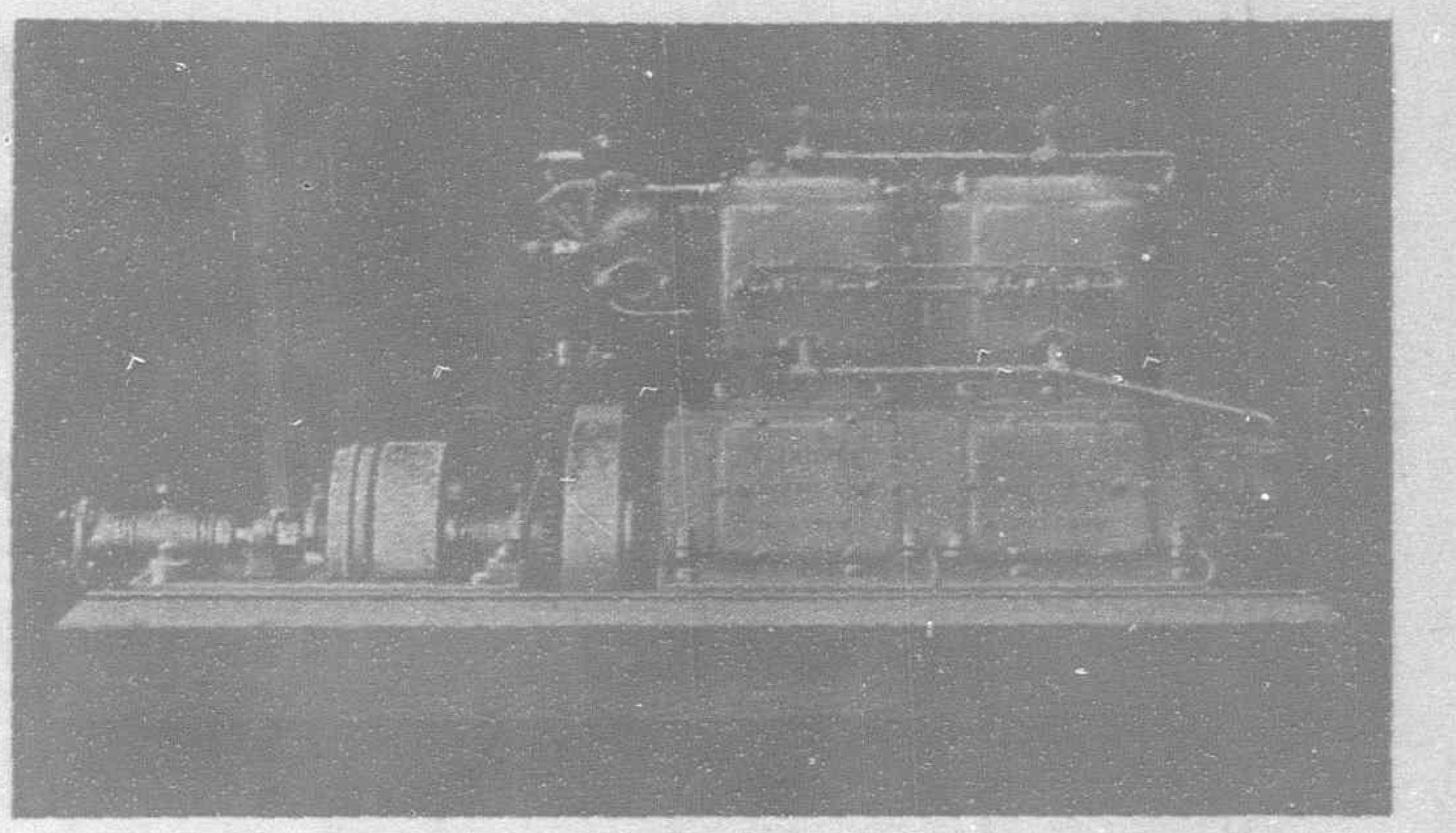

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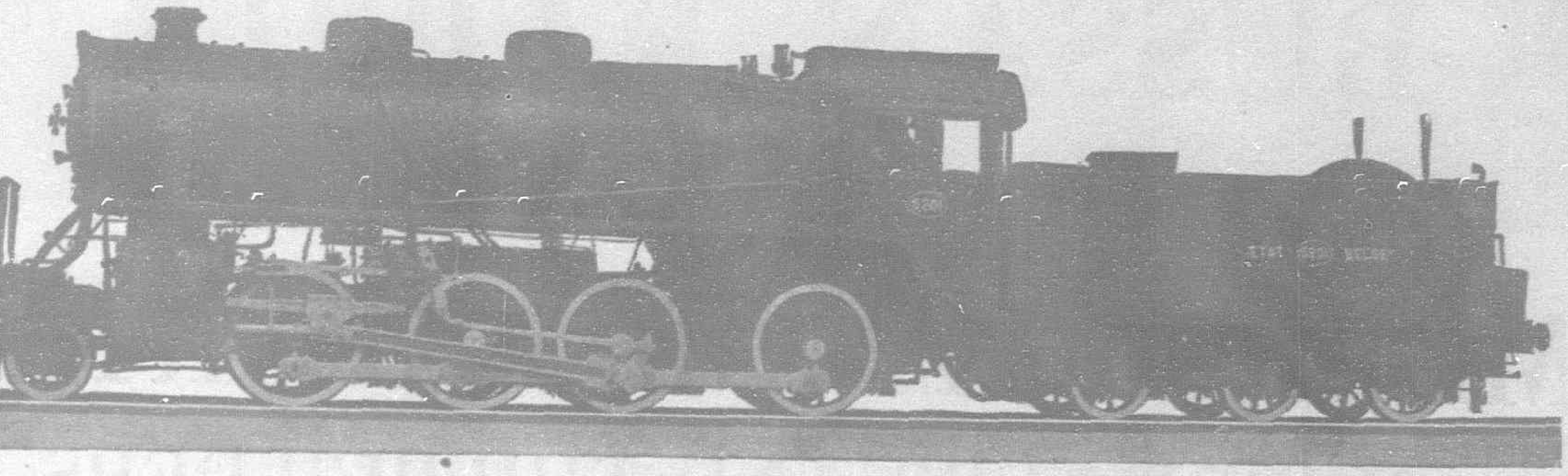

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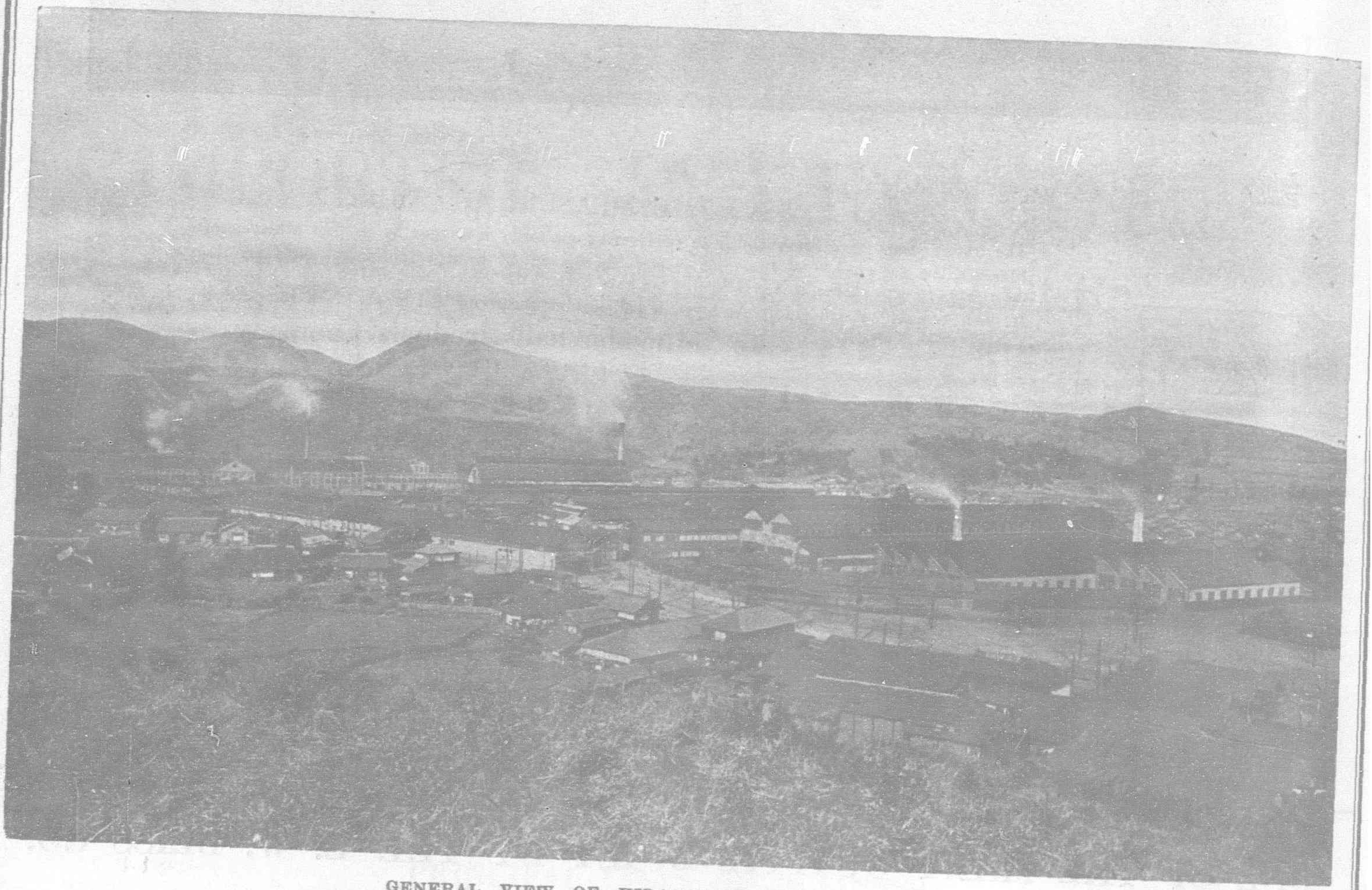

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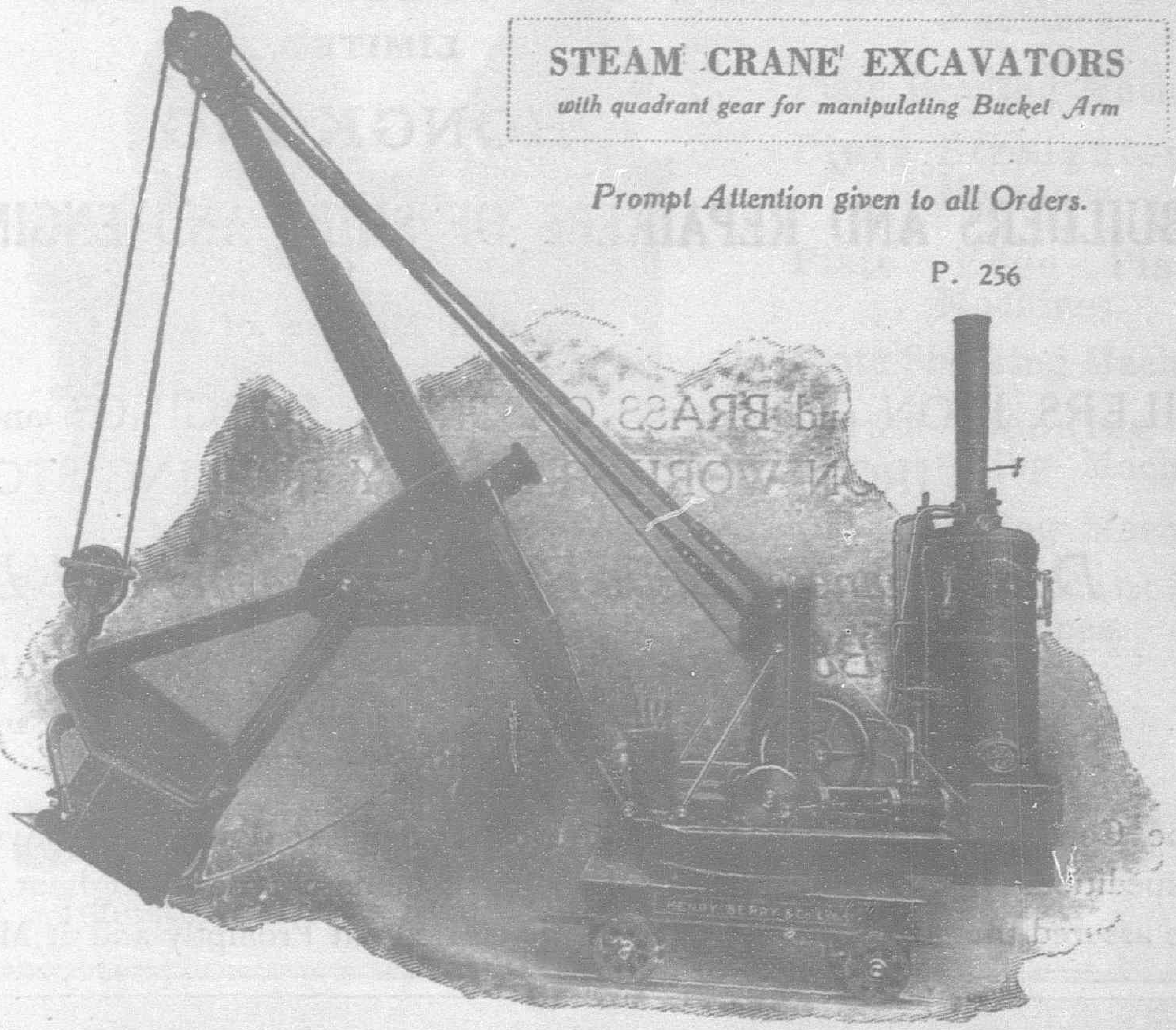

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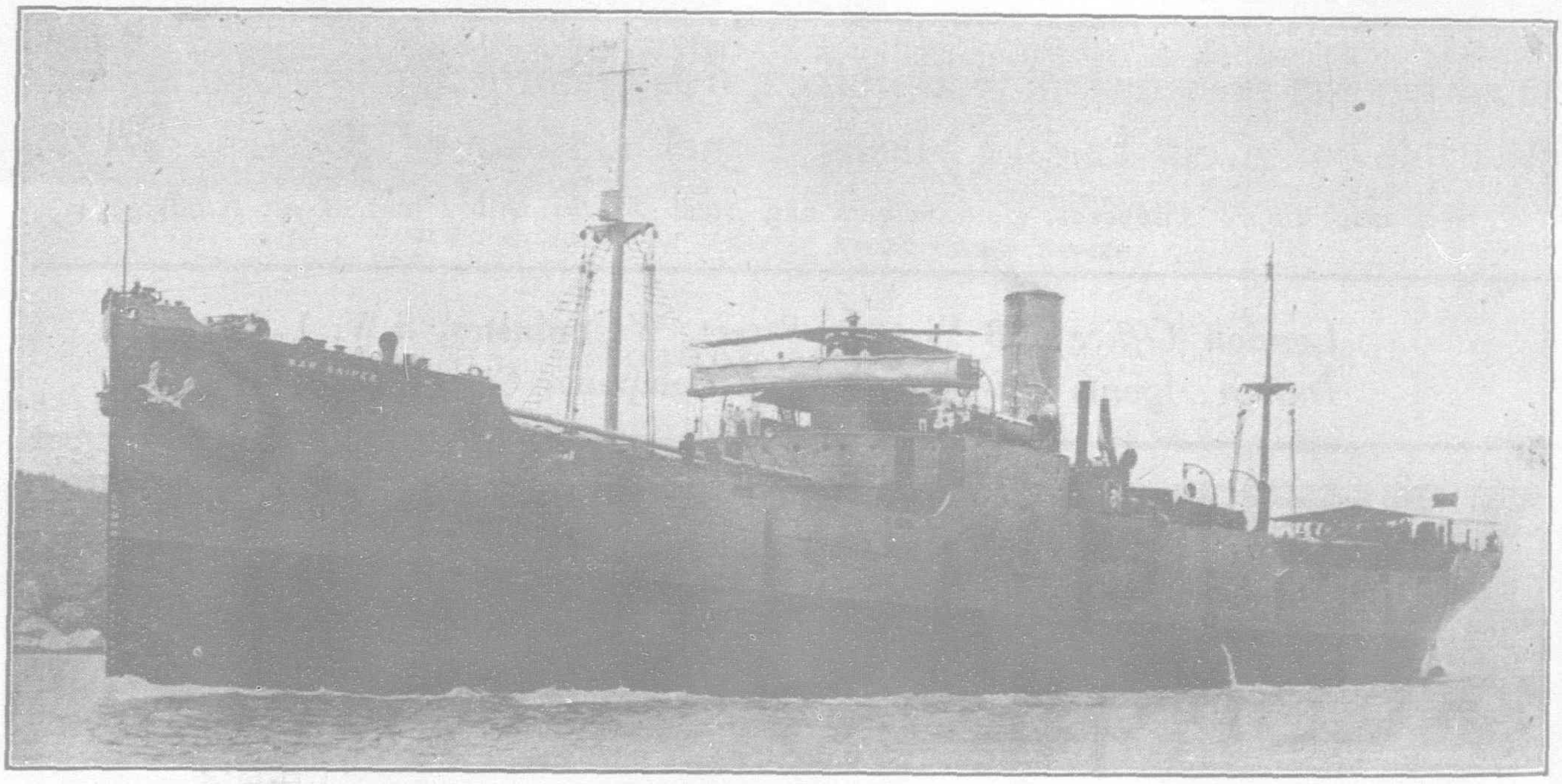

S.S. "*WAR SNIPER*," 8,200 tons d.w.—5,175 tons gross. Built and engined by The Hongkong & Whampoa Dock Co., Ltd. to the order of the British Government.

Address Enquiries to the Chief Manager, R. M. DYER, B.Sc., M.I.N.A., Kowloon Docks, Hongkong

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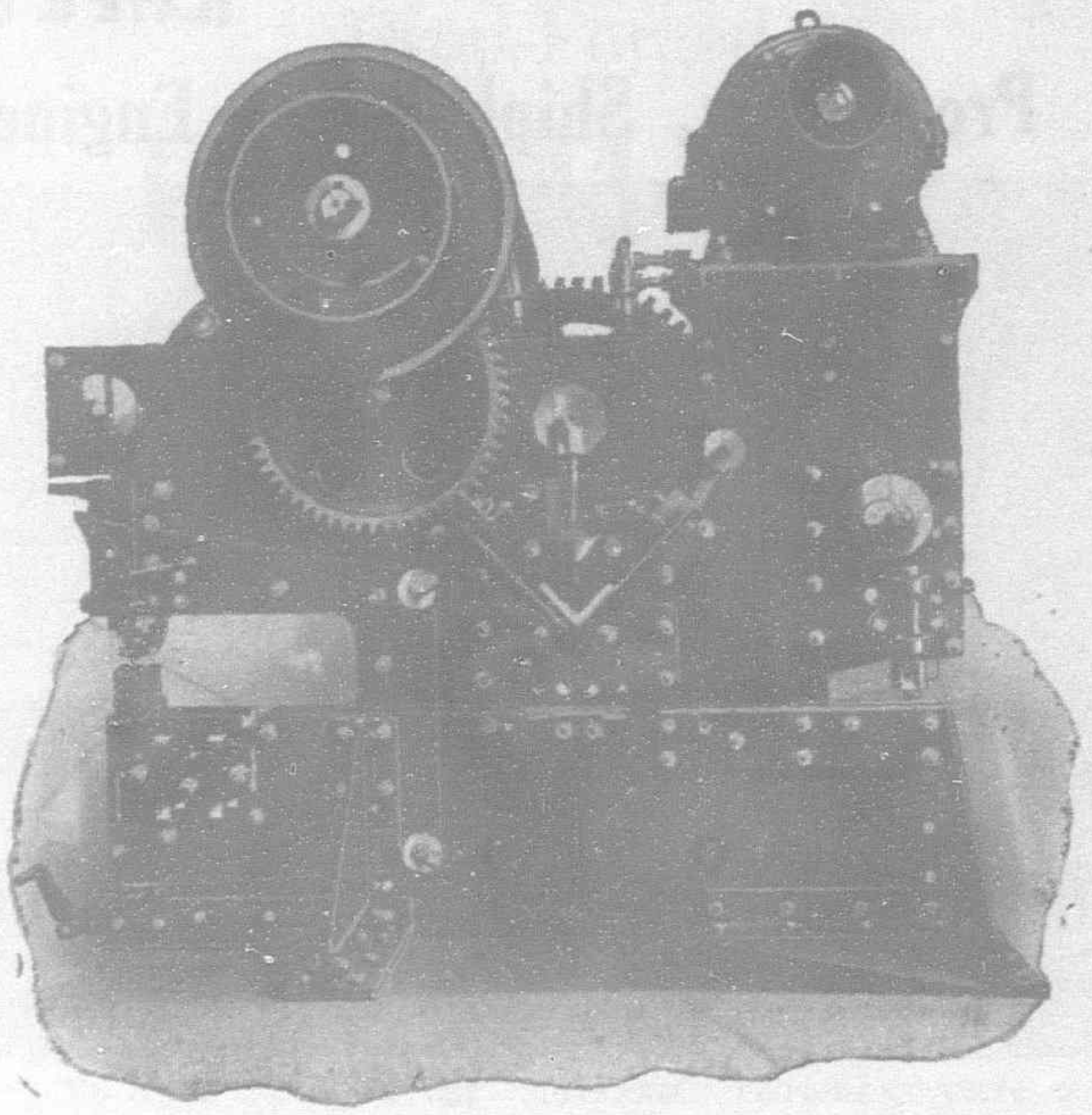

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WATER-TUBE STEAM BOILERS

SUITABLE FOR ALL INDUSTRIES, AND FOR BURNING ANY KIND OF FUEL

13,400,000 H.P. Land-type For Stationary Purposes—**6,400,000 H.P.** Marine-type Afloat

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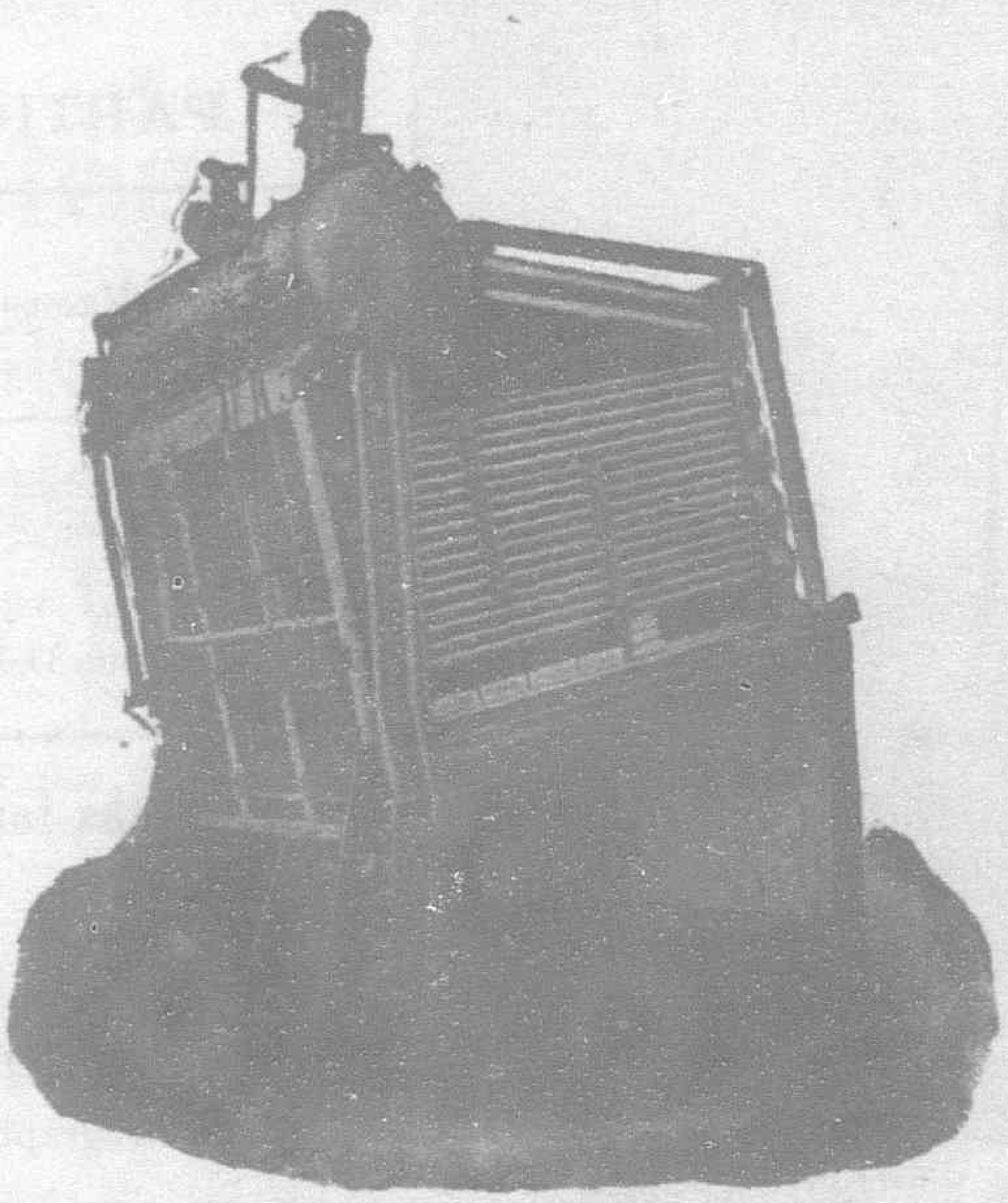
as used in Battleships and Cruisers of the British, American, Danish, Italian, Spanish, Brazilian, and Argentine Navies, and in Vessels of all Classes of the Mercantile Marine.

BABCOCK & WILCOX also Supply as Joint Manufacturers and General Licensees with J. SAMUEL WHITE & CO., LTD. the WHITE-FORSTER Boiler for Destroyers, Torpedo Boats, Pinnaces, etc.



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The Shanghai Dock and Engineering Co., Ltd.

Established 1862 **(LATE S. C. FARNHAM, BOYD & CO., LTD.)**

Boilermakers, Dock Proprietors, Shipbuilders, Engineers and Electricians

HEAD OFFICE:
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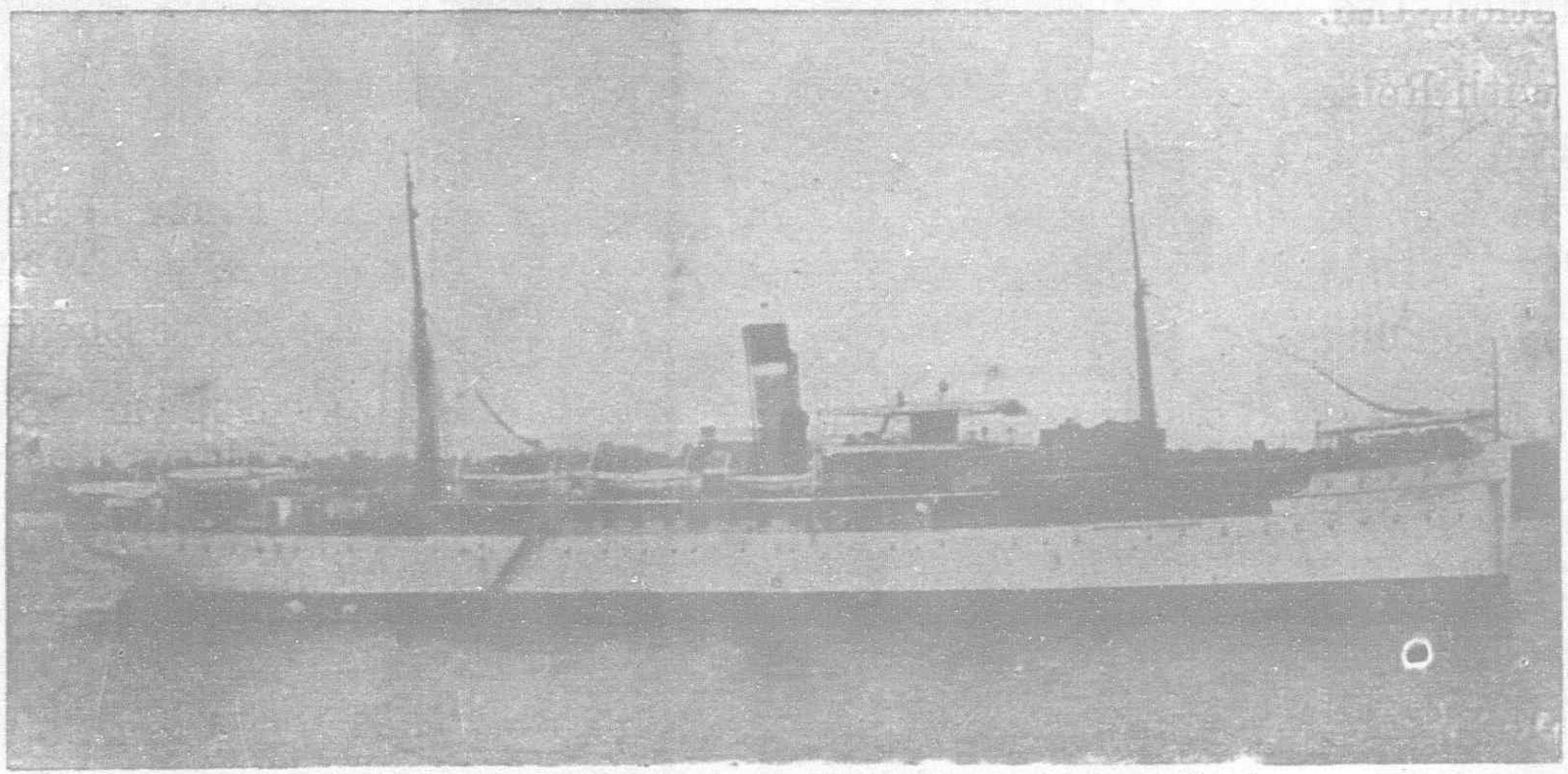

U.S. ARMY TRANSPORT "MERRITT," 300′ 0″ × 45′ 0″ × 28′ 3″

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Codes Used,
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& 6th Editions
A-1, Watkin's,
Scott's,
Western Union,
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and
Engineering.

The "Merritt" is one of Twenty-Seven Steam Vessels built during the last few years to the order of The American Government for service in the Philippine Islands.

The Docks are five in number, ranging in length from 355 feet to 532 feet on the Blocks, and breadth of entrance from 53 feet to 77 feet, with a depth of water on the sill of from 16 feet to 24 feet.

The Dock charges are the most moderate in the Far East.

The Company's Yards and Docks cover 96 acres. The Water Frontage is about 1½ miles in length. Wharves and Pontoons are arranged where steamers can moor during repairs; and slips for hauling up small vessels are provided. Sheer legs capable of lifting 65 tons are placed at the various Docks.

The extensive Shipbuilding yards and workshops, lit by Electric Light, are provided with the latest improvements, such as travelling cranes of 60 tons' capacity, hydraulic and pneumatic machinery and tools.

Light railway lines are laid throughout workshops and yards.

A Staff of Divers, and powerful salvage appliances, and Floating Cranes ready for any emergency at short notice. Enquiries immediately attended to.

Estimates given for all classes of work: Coast Steamers, Side and Stern Wheelers, Tugboats, Launches, Steam Barges, Dredgers, Floating Cranes, and Lighters a speciality.

Every description of repairs and renewal work undertaken and expeditiously executed.

Motor, Land and Marine Engines and Boilers, Centrifugal, Mining, and other pumping machinery always in stock or in progress, also power driven Machine Tools. Engineer's Hand Tools, Steam, Gas, Oil, and Electric machinery and Engineering accessories generally.

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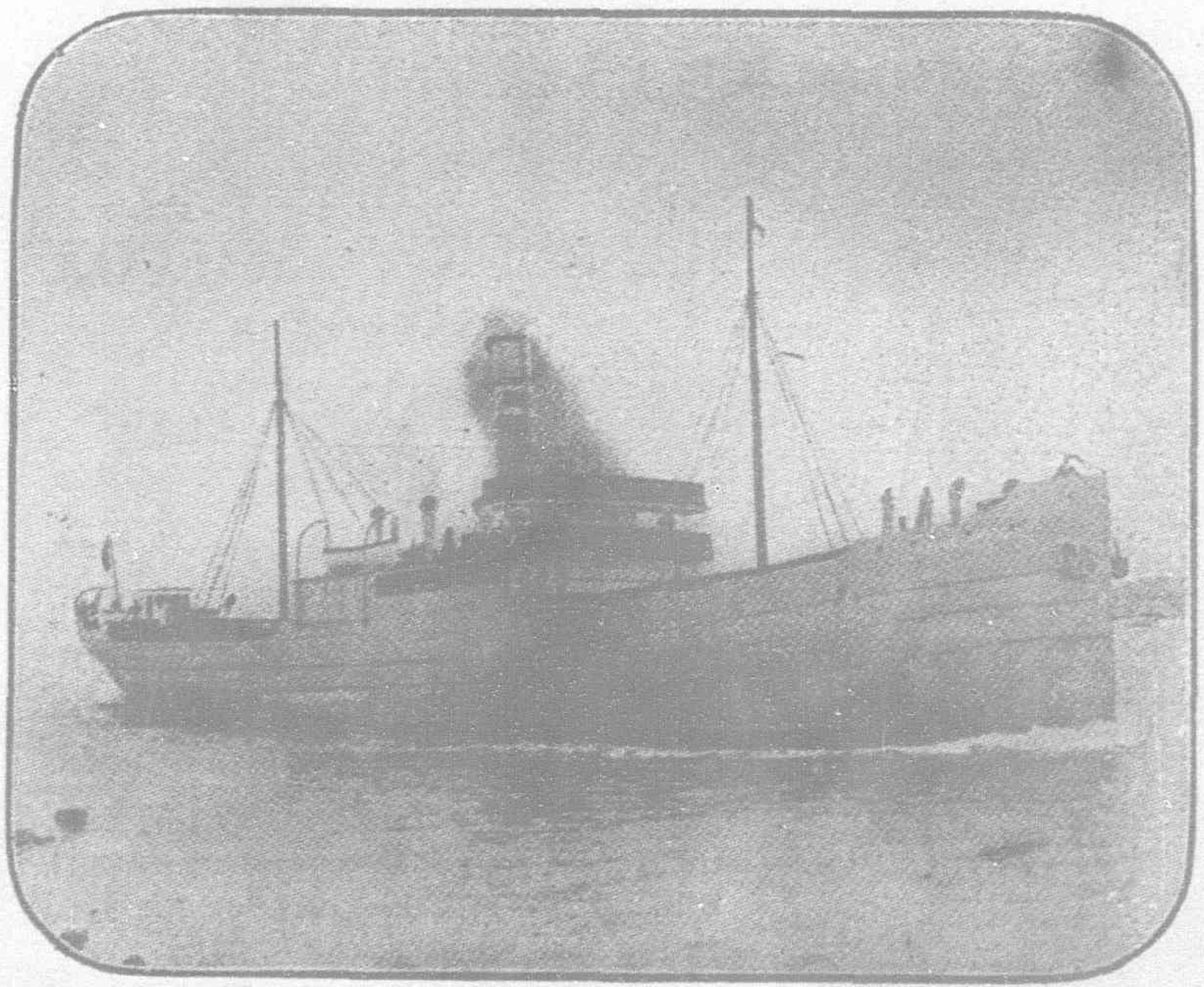

One of Six Steel Cargo Steamers presently under construction.

CALL FLAG FOR VESSELS IN SHANGHAI HARBOUR
"F.B." INTERNATIONAL CODE

PARTICULARS OF DRY DOCKS

Names	Length on Blocks	High Water	
		Breadth of Entrance	Depth of water on Sill
Cosmopolitan Dock ...	532 feet	77 feet	24 feet
International Dock ...	528 ,,	77 ,,	23 ,,
New Dock	450 ,,	74 ,,	21 ,,
Old Dock	399 ,,	53 ,,	16 ,,
Tunkadoo Dock ...	350 ,,	67 ,,	16 ,,

Berths for Building Steamers up to 10,000 tons Deadweight Capacity.

Representatives and workmen attend vessels at Woosung and outports on request.

☞ Telegraphic and Wireless Instructions from vessels promptly attended to

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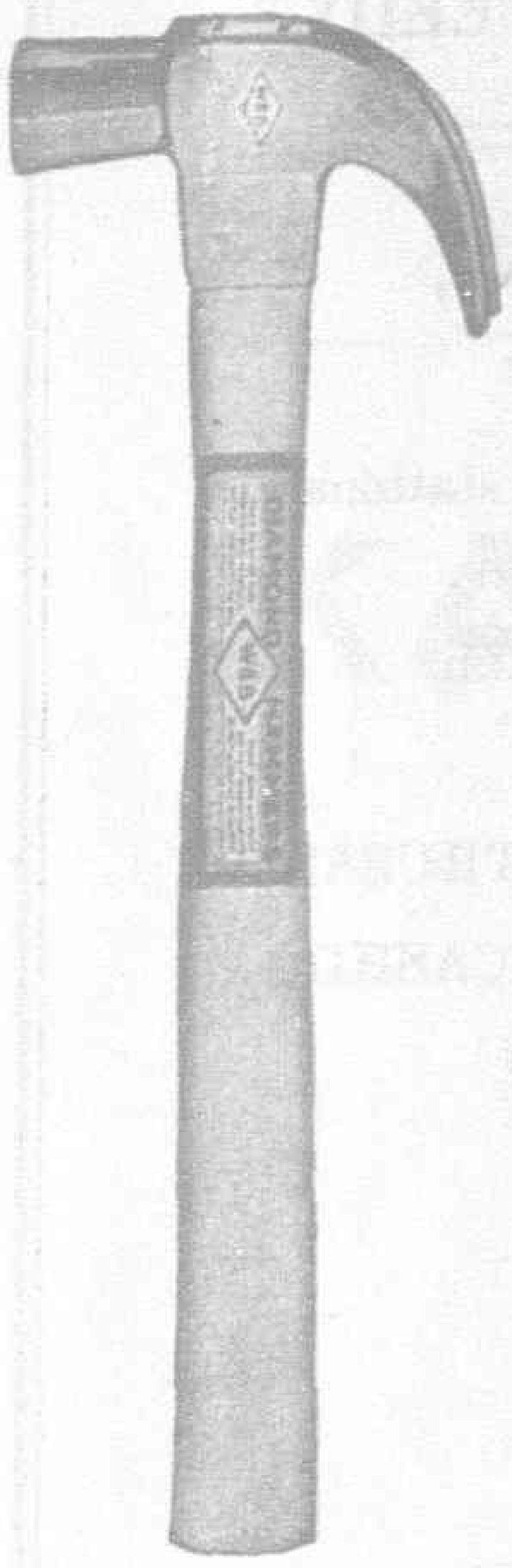

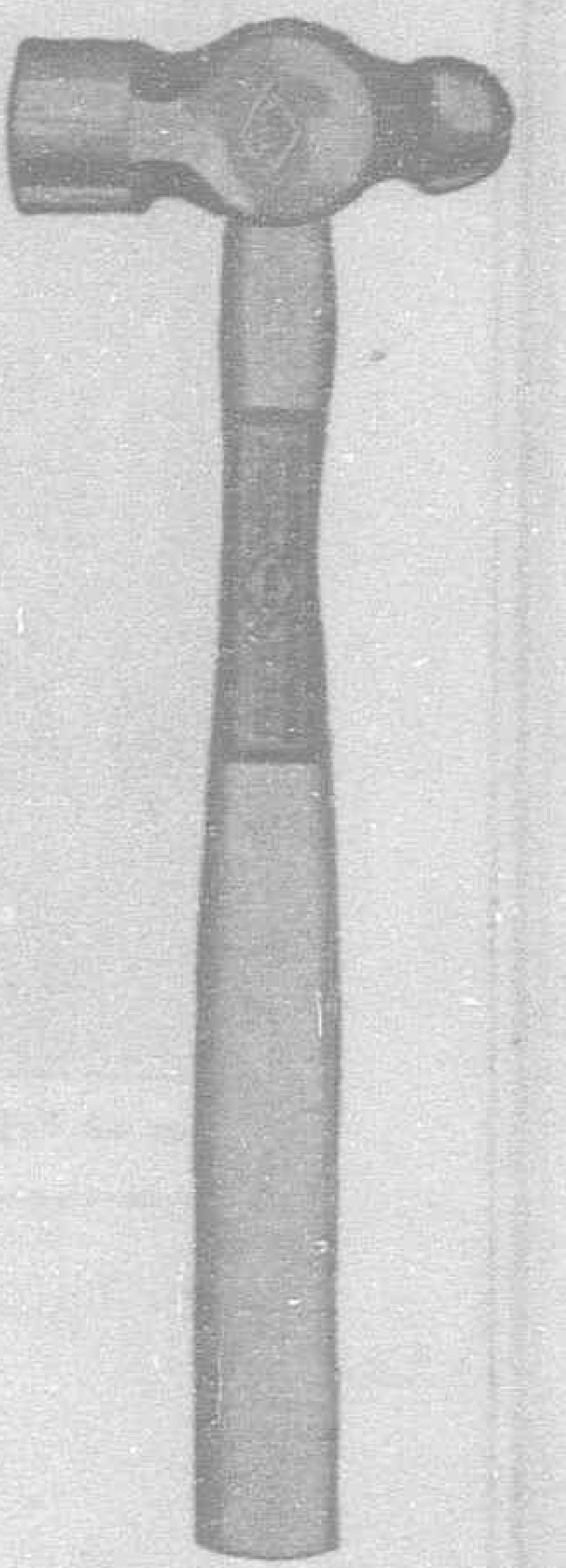

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Drop-Forged
HAMMERS

are dependable Tools because—

Their Heads, drop-forged from a special grade of tough steel carefully hardened and tempered, neither crack, chip nor splinter.

They are fastened most securely and solidly to the handles—can't work loose—can't fly off.

Their Handles are made of the best grade of clear, straight-grained hickory—flared at the grip to prevent hand-slip.

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"If two men set out to climb one ladder, did you ever find the weakest anywhere but at the foot?" said a certain famous writer. In other words, the battle is to the fit. Edgar Allen Small Tools have already "climbed their ladders" and proved their fitness when they reach the customer. The mark they bear means that the tests for eliminating the weaker or "unfit" tools have all been successfully passed at the factory. It means that every tool is fitted for the work it has to do; that it will do that work without failure or delay. In short, it means efficient work and economical performance—i.e., big savings

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carry the "Stag" mark, which is the Edgar Allen token of responsibility for the performance of every file which leaves the Imperial Steel Works. You are able to buy Edgar Allen Files only because their makers know them to be fit for the work they do. If they did not know that, there would be no Edgar Allen Files sold. Therefore, when ordering files, remember that the true test of value lies in the mark, not merely in the price per dozen.

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High Speed Steel Twist Drills, Cutters, Reamers, etc.

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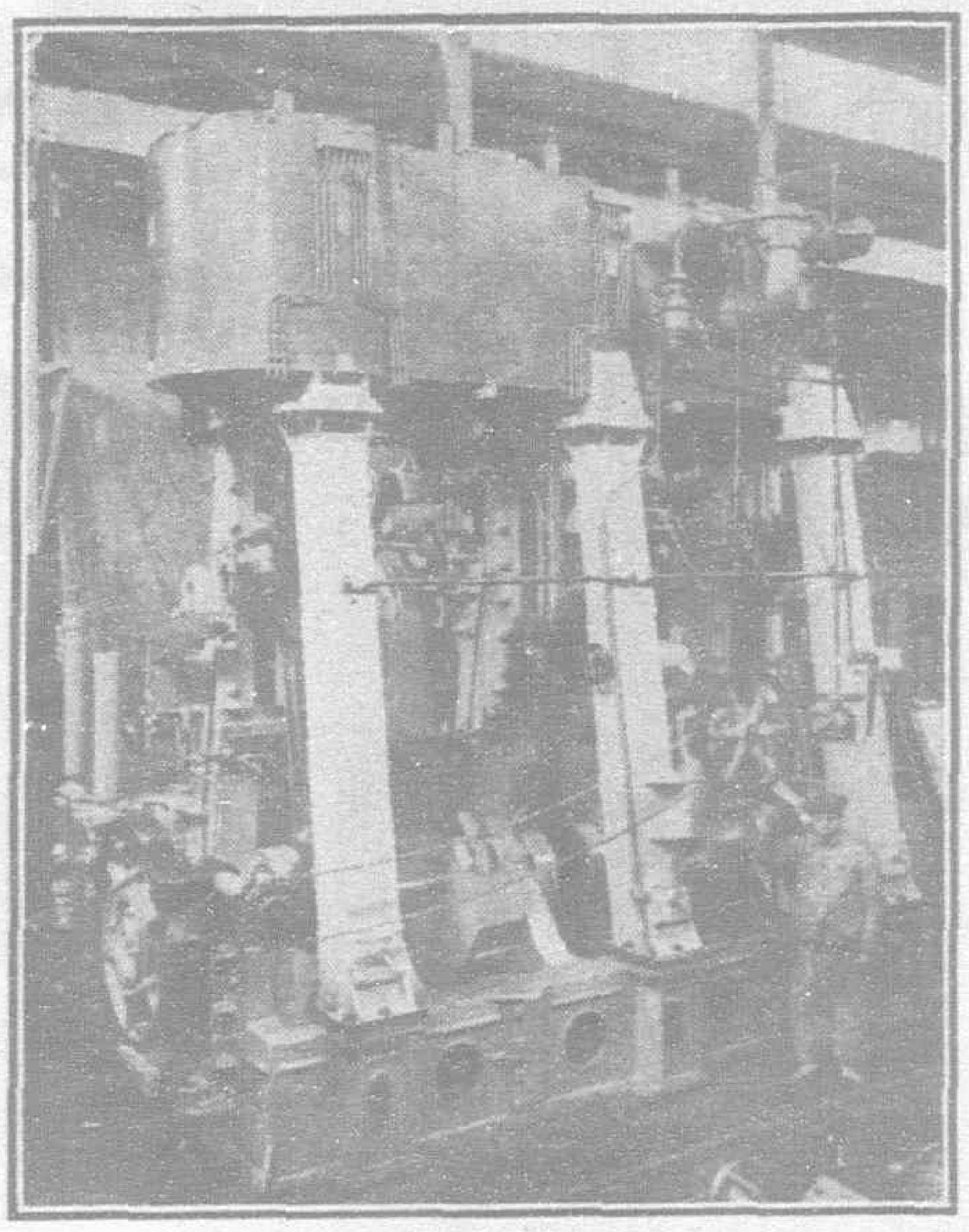

Set of Triple Expansion Engines for Cargo Steamer

THE NEW ENGINEERING & SHIPBUILDING WORKS LTD.

SHANGHAI, CHINA Cable Address: "SPEEDY"

ENGINEERS, BOILERMAKERS, ELECTRICIANS, FOUNDERS, WELDERS, SALVAGE EXPERTS

COMPOUND AND TRIPLE EXPANSION ENGINES for marine and stationary purposes.

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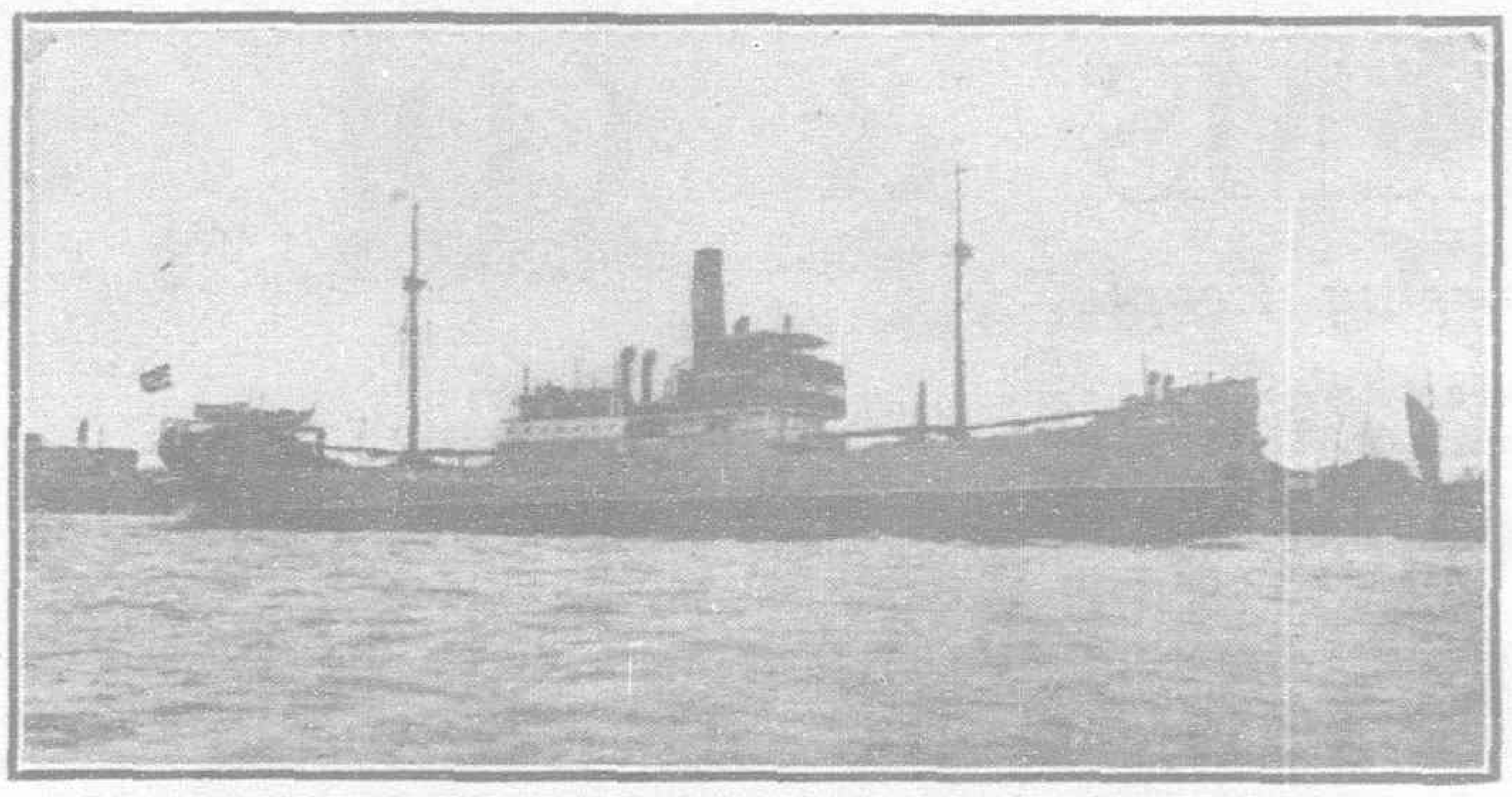

S.S. "Halvdan," one of 8 Steamers Built and Engined at Works

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Ocean and River Craft Oil Carriers

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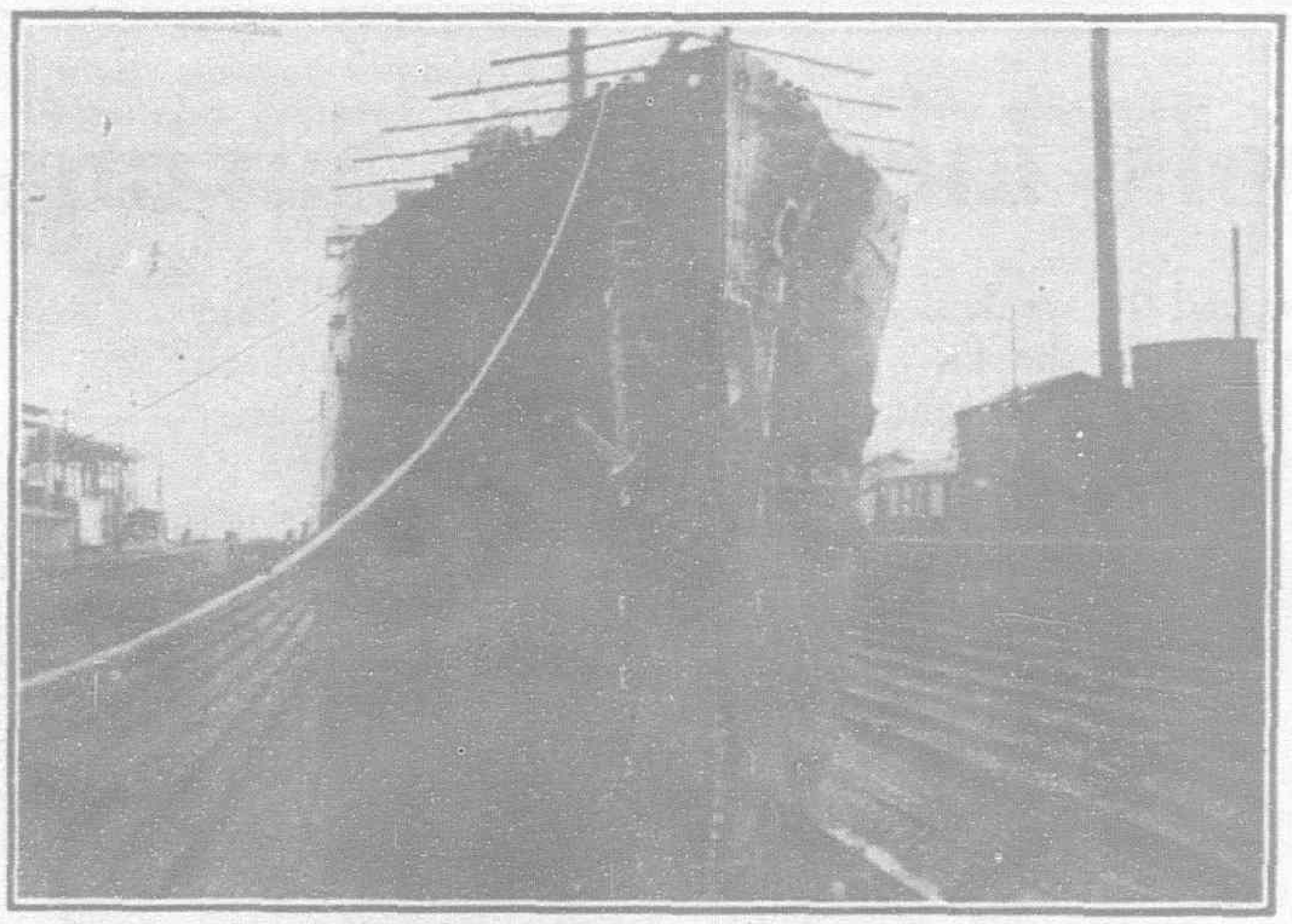
Steam or Motor Driven

Steel, Wood or Composite built.



7,000-ton Steamer Docked for Repairs of Damage Sustained in Collision

DOCK PROPRIETORS

Yangtszepoo Dock

Length	577'-0"
Entrance	70'-0"
Width of Sill	60'-0"
Depth on Sill	20'-0"

Patent Slips

for vessels up to 200-ft. long

Vessels docked promptly

General Repairs, Annual Overhauls and Re-classification Work executed efficiently and expeditiously under European Supervision.

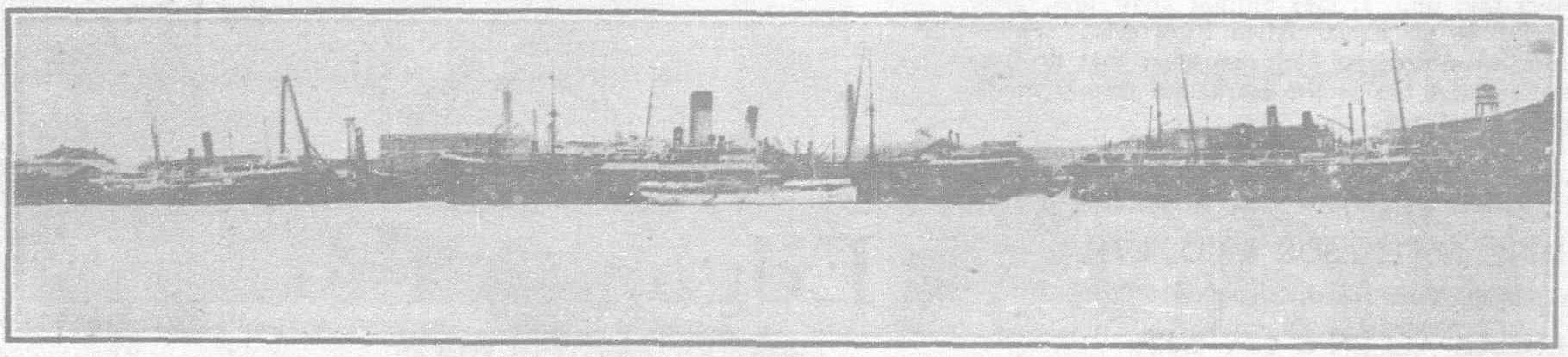
Moderate Charges

Vessels undergoing repairs accommodated at wharves alongside Works.

The Works are equipped with the latest Machine Tools, Electric Drills, Pneumatic and Hydraulic Plant and Tools, Quasi-Arc Electric Welding and Oxy-Acetylene Welding, Galvanizing Plant.

Salvage Experts, Divers and a comprehensive Salvage Plant. Floating Cranes to lift 50 tons and Sheerlegs to lift 80 tons.

THE PROPERTY OF THE COMPANY COVERS AN AREA OF ABOUT 40 ACRES with a RIVER FRONTAGE of 1,800-ft.



General View of Works from River Side
Showing 8 Steamers Berthed Alongside Undergoing Repairs.

Cable Address :
"DOCKYARD" KOBE
"DOCK" DAIREN

A1, A.B.C. (4th and 5th),
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and
Western Union Codes Used

KAWASAKI DOCKYARD CO., LIMITED

CONTRACTORS TO THE IMPERIAL JAPANESE ARMY AND NAVY AND TO FOREIGN GOVERNMENTS

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ESTABLISHED 1870

STEEL MAKERS, SHIP-OWNERS, LOCOMOTIVE BUILDERS, SHIPBUILDERS, ENGINEERS AND REPAIRERS

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Specializing in

CARGO BOATS
MIYABARA'S PATENT WATER TUBE BOILERS
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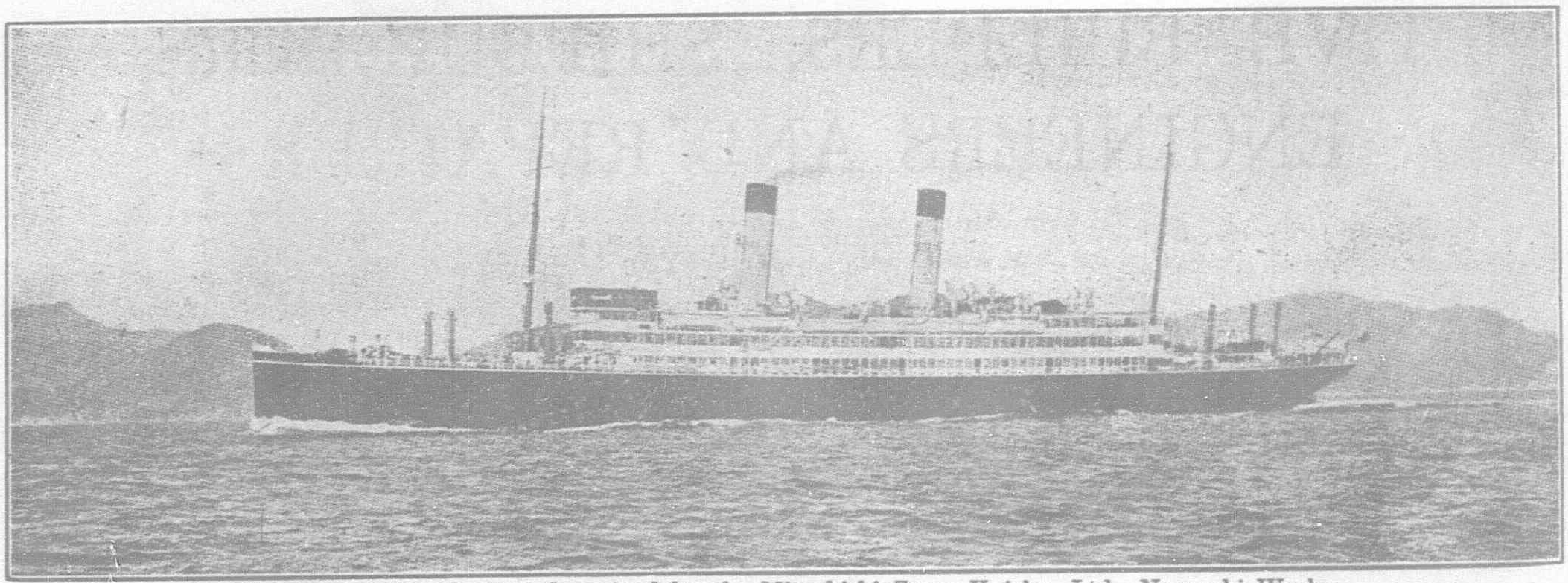
TSUTSUMI'S PATENT DOUBLE ACTING AIR PUMPS

DRY DOCKS: No. 1, 500-ft. long; 70-ft. wide; 35-ft. deep.
No. 2, 457-ft. ,, 66-ft. ,, 32-ft. ,,



The *Tenyo Maru,* built and engined by the Mitsubishi Zosen Kaisha, Ltd., Nagasaki Works

MITSUBISHI ZOSEN KAISHA, LTD., NAGASAKI WORKS

(ex Mitsubishi Dockyard & Engine Works, Nagasaki)

DOCK No. 1

Extreme Length	523	Ft.
Length on Blocks	513	,,
Width of Entrance on Top	89	,,
,, ,, ,, ,, Bottom	77	,,
Water on Blocks at Spring Tide	26½	,,

DOCK No. 2

Extreme Length	371	Ft.
Length on Blocks	350	,,
Width of Entrance on Top	66	,,
,, ,, ,, ,, Bottom	53	,,
Water on Blocks at Spring Tide	24	,,

DOCK No. 3

Extreme Length	728.9	Ft.
Length on Blocks	714	,,
Width of Entrance on Top	99½	,,
,, ,, ,, ,, Bottom	88½	,,
Water on Blocks at Spring Tide	34½	,,

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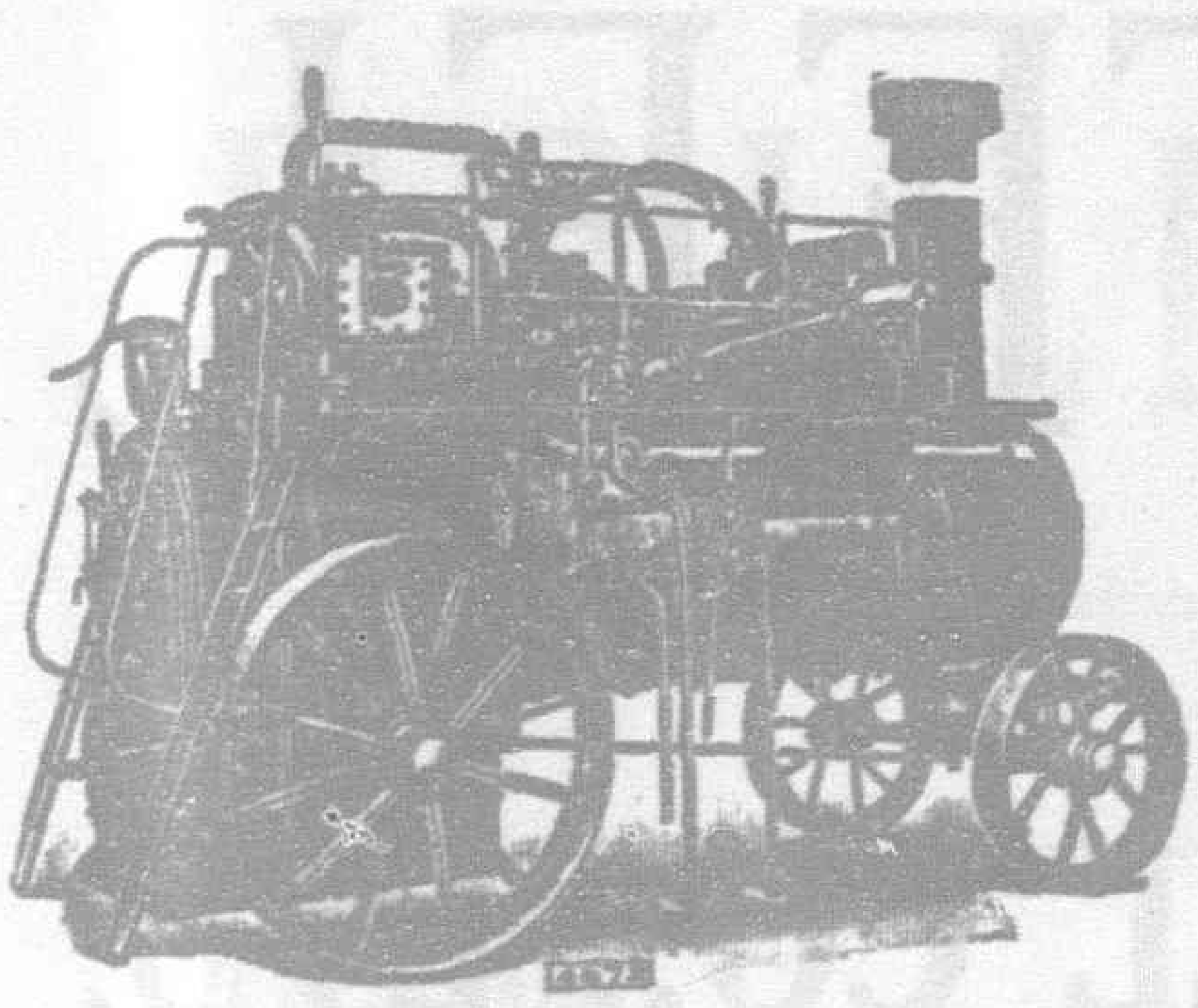
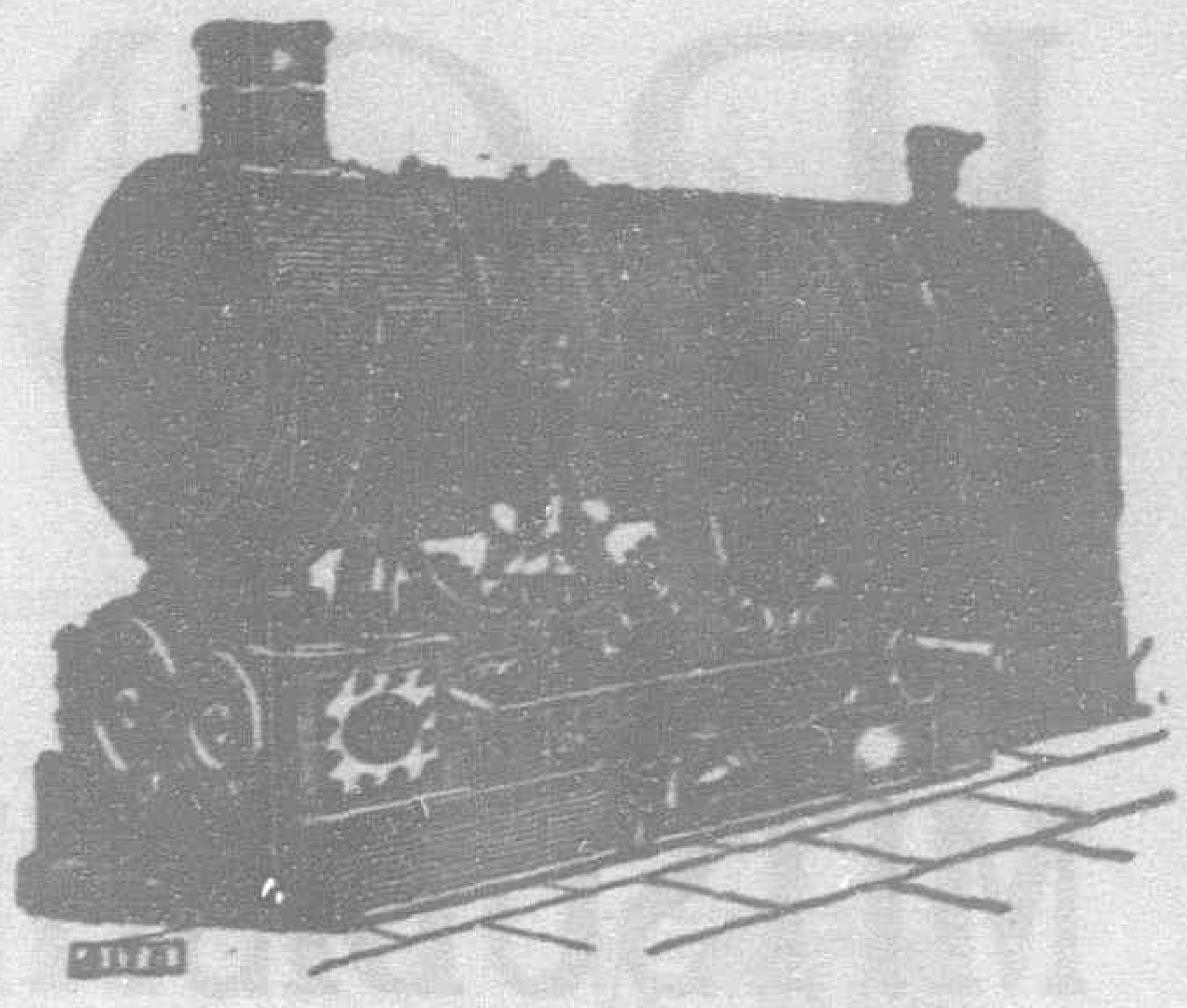
Also Electrical Work

LARGE STOCK OF MATERIAL AND FITTINGS ALWAYS ON HAND





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FOR ALL PURPOSES

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PORTABLE AND TRACTION STEAM ENGINES, STATIONARY ENGINES, VERTICAL ENGINES,
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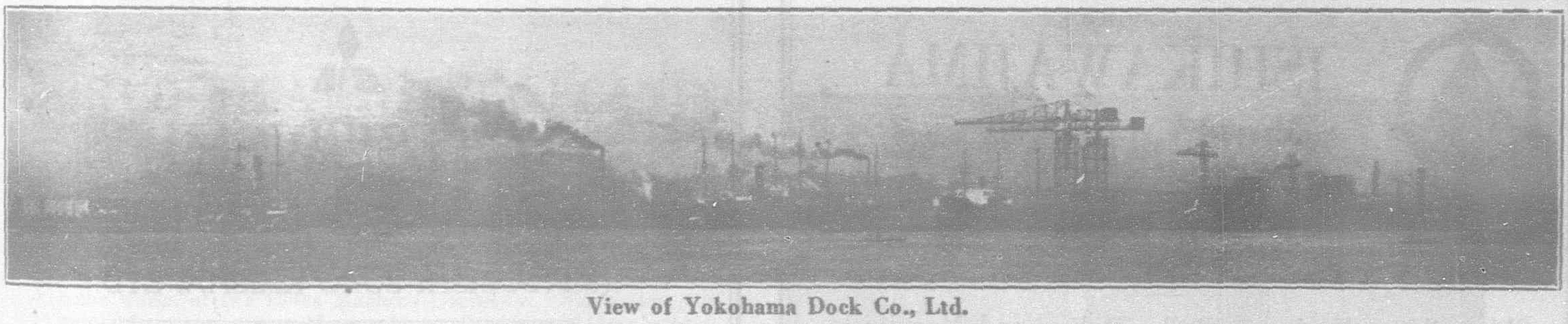

View of Yokohama Dock Co., Ltd.

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Dock Owners, Shipbuilders, Repairers, Engineers, Machinists, Boiler Makers and Warehousemen.
Operating Dockyard, Shipbuildingyard and Storage Warehouses at Yokohama, Japan.

Head Office: Nagasumi-cho :: *Warehouse Office:* Midori-cho

Builders for
United States Shipping Board,
Japanese Navy,
Nippon Yusen Kaisha,
and other Principal Shipowners

Cable Address:
"DOCK"
Code Used:
A. I. A.B.C. 4th and 5th, Bentley's

DRY DOCKS:

No. 1	625′ × 80′ × 28′
No. 2	380′ × 50′ × 26′
No. 3	480′ × 63′ × 21½′

SHIPBUILDING BERTHS:

No. 1	400′ × 27′
No. 2	490′ × 30′
No. 3	580′ × 36′
No. 4 No. 5	680′ × 38′

WAREHOUSES:	TSUBO.
Iron Building	8,871.57
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All situated in Yokohama Harbour, the First Port at which Trans-Pacific Steamships arrive, and the Last Port from which they depart.

Complete Facilities for every Work and Fully Equipped up to date for

All Repairing Work. All Engine Work. All New Ship Work. All Boiler Work.

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(MITSUBISHI SEITETSU KAISHA, LTD.)

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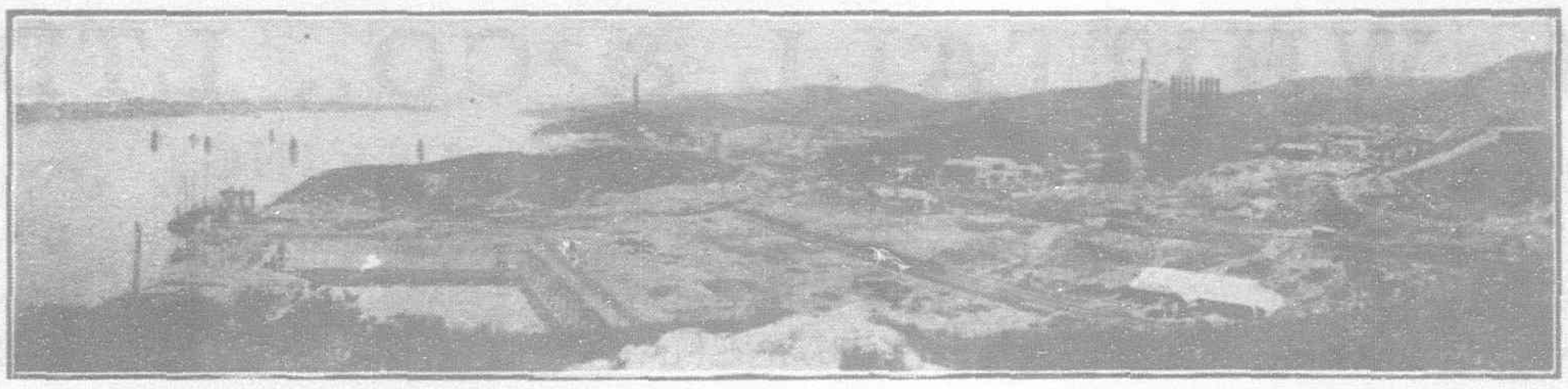

ESTABLISHED
1876

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SHIPBUILDING AND ENGINEERING CO., LTD.

Capital - - - Yen 5,000,000

Shipbuilders, Engineers, Boiler Makers and Machinists.

Manufacturers of

Boilers, Mitchell's Luffing Cranes, Girders, Bridges, Marine Pumps, Turbines, Hydraulic Machinery, etc.

Licensees of

Woodeson's Water Tube Boilers and Clarke, Chapman & Co.'s Pumps

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Telegrams: "ZOSEN," TOKYO
Codes: A.1; A.B.C. 5th Edition Impr.;
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YOKOHAMA
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WITH TWO BRANCHES IN TOKYO

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East, West, North and South Brill-built tramcars and trucks have gone to live up to that reputation for correctness of design and workmanship that is largely responsible for the development of the Brill business to a place of international importance.

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BETTS HEAVY DUTY PLANING MACHINE

Of interest to shipyards, steel mills, and all works having to do extra large size heavy duty machine work.

This illustration shows the 16′ × 10′ × 30′ stroke planing machine made for the League Island Navy Yard, erected in the home works of the Betts Machine Company. Some idea can be gained from the men on the machine, of the size of the planer.

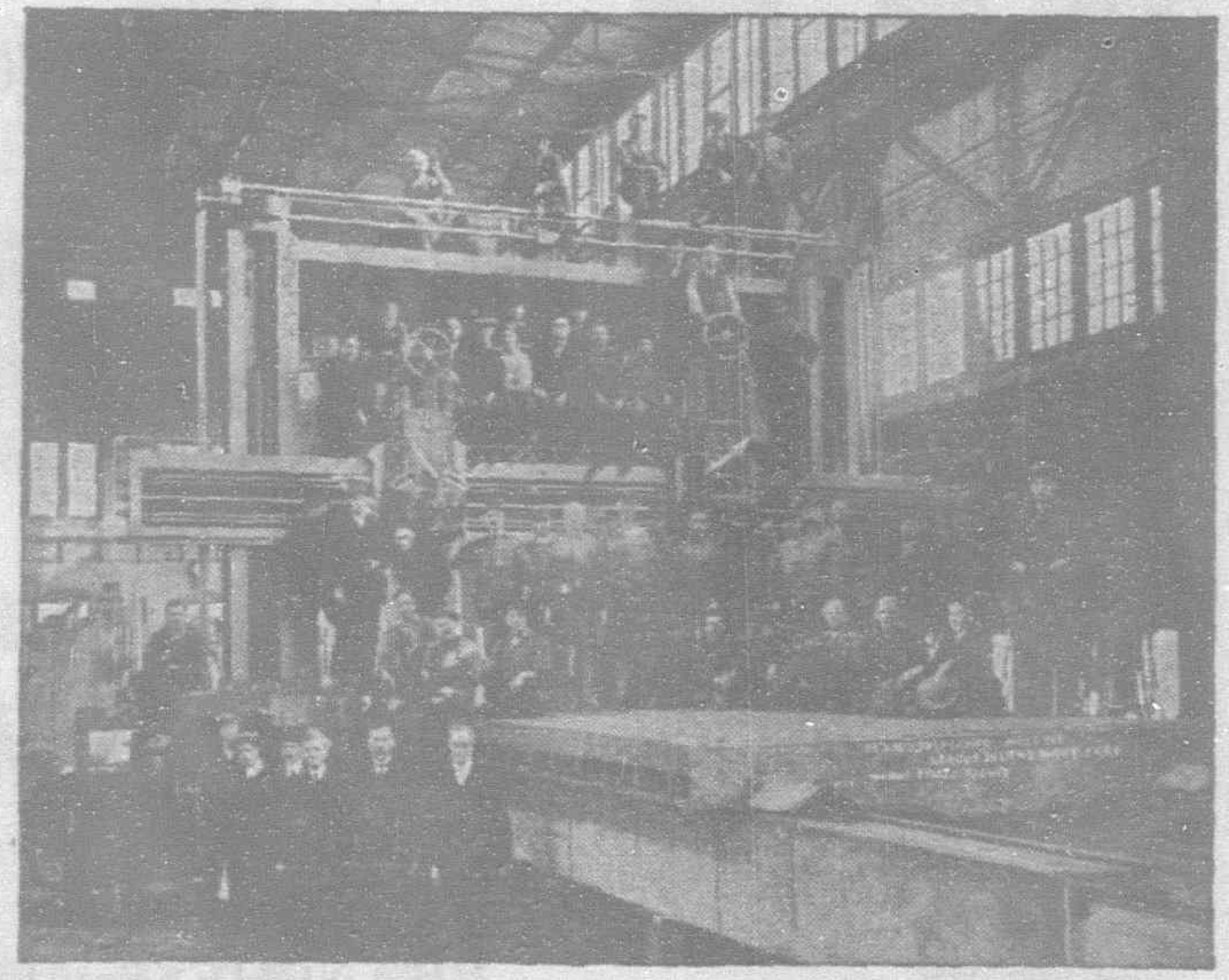
Betts Heavy Duty Planers are made in a complete range of sizes, 36″ × 36″ of any planing length up to any dimensions required.

When a job is difficult or of large magnitude they use a Betts. Betts Machines serve when others are found wanting.

Betts Machines lighten onerous labor for the skilled craftsman.

A Betts Machine Tool for every need in heavy duty work.—Let us have your problems.

Engine Lathes, Axle Lathes, Journal Trueing Lathes, Vertical Boring and Turning Mills, Tire Turning and Boring Mills, Horizontal Boring Machines, Planing Machines, Slotting Machines, Multiple Spindle Milling Machines and Munition Manufacturing Machines.



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Established in
1861

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WAREHOUSING AREA - - - - - - - - - 77,000 tsubo (308,000 Sq. yds.)

VALUE OF GOODS IN WAREHOUSE (latest date) - - - Yen 275,000,000

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Directors: K. HAYASHI and K. FUKUI

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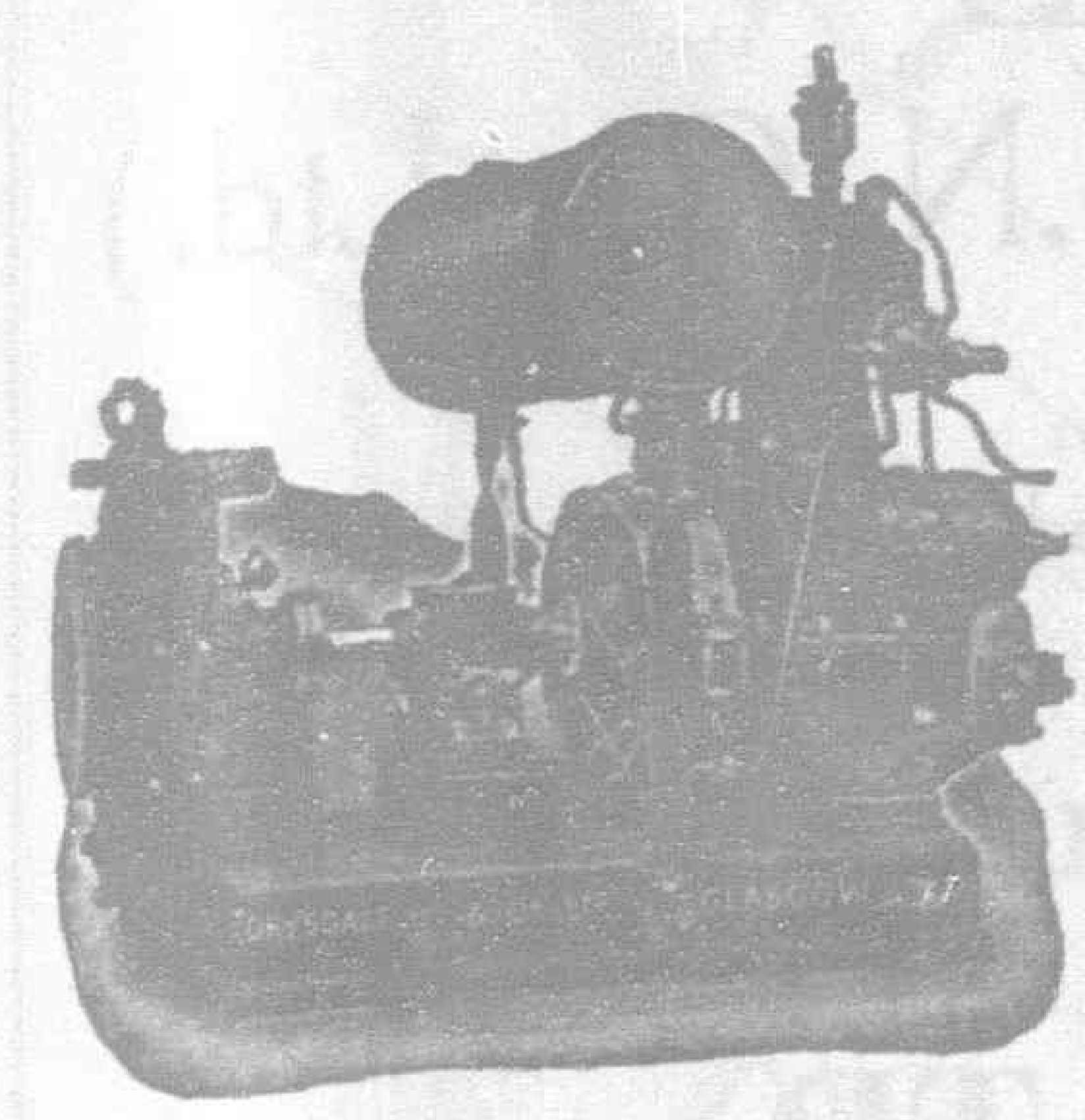
KOBE—Kano-cho
MOJI—Hama-cho
SHIMONOSEKI—Kannonzaki-cho



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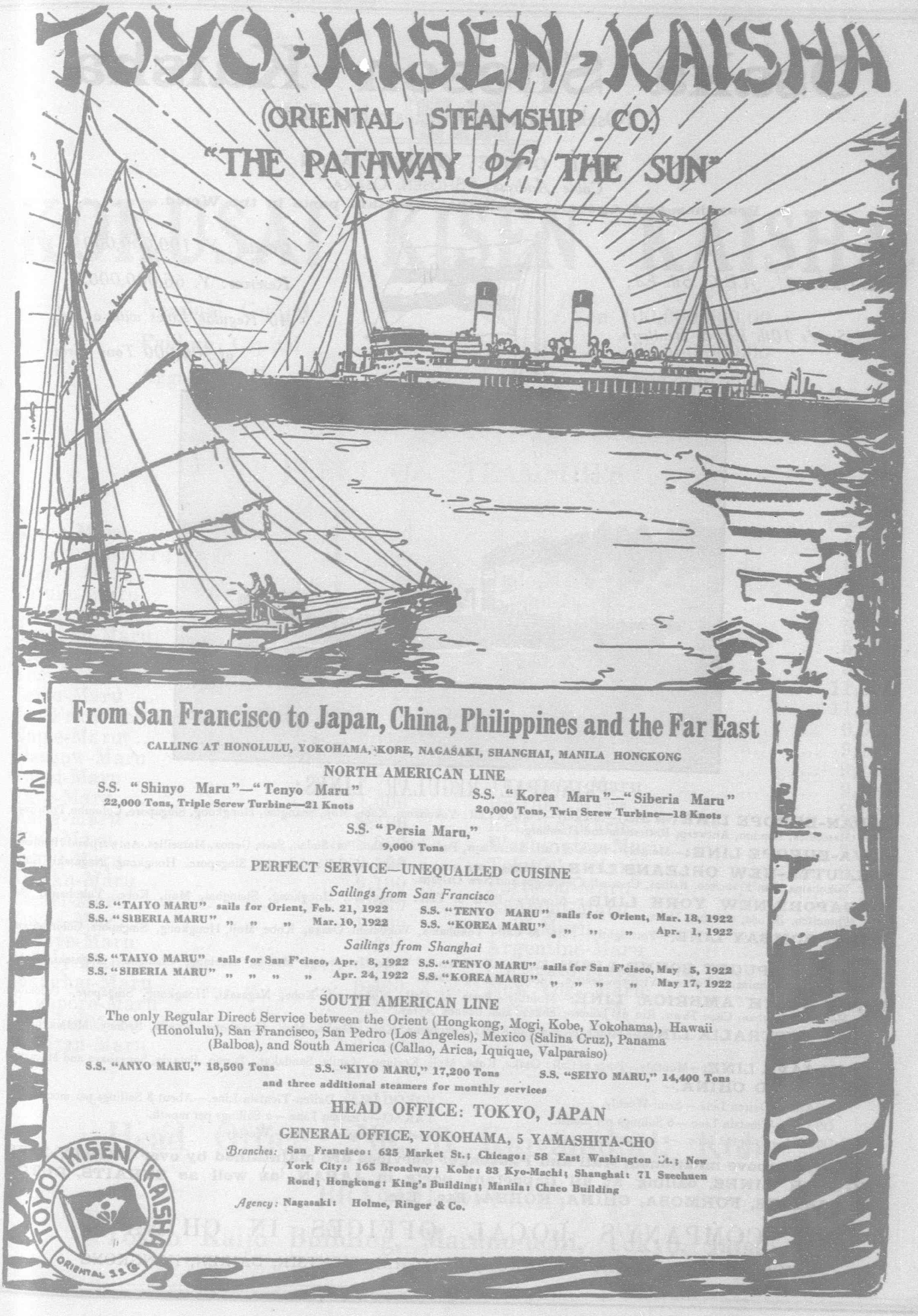

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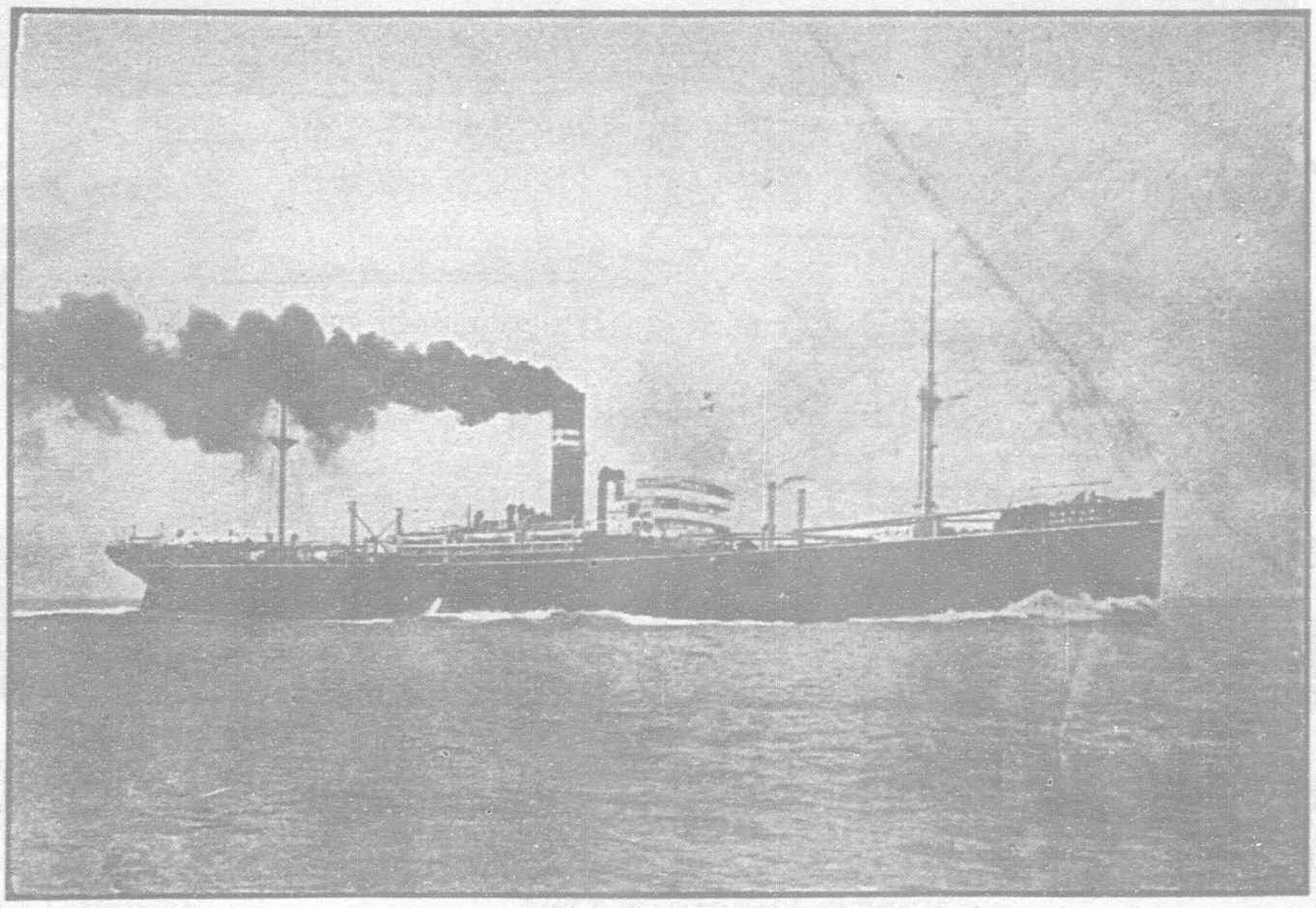

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Paid-up Capital	,,	87,500,000.00
Aggregate Tonnage		500,000 Tons

FLEET OF STEAMSHIPS

Name	Tons D.W.
Rozan-Maru	8,700
Vancouver-Maru	9,100
Boston-Maru	8,800
Tofuku-Maru	9,100
Chifuku-Maru	9,100
Ryufuku-Maru	9,100
Hankow-Maru	6,400
Yoni-Maru	11,000
Taibu-Maru	8,900
San Francisco-Maru	9,100
Naple-Maru	9,100
Glasgow-Maru	9,100
Yayoi-Maru	8,700
Yaye-Maru	11,000
Malta-Maru	8,700
Buyo-Maru	8,800
Brazil-Maru	9,100
Kofuku-Maru	9,100
Yezari-Maru	6,900
Yugao-Maru	5,000
Yubaye-Maru	5,000
Sydney-Maru	6,400
Shanghai-Maru	6,400
Singapore-Maru	9,100
Jyufuku-Maru	9,100
Hiyeizan-Maru	6,700

Name	Tons D.W.
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Suez-Maru	6,600
Daio-Maru	9,000
Kashu-Maru	8,800
No. 2 Kifunesan-Maru	5,000
Yousan-Maru	5,000
Taisan-Maru	5,000
Yuri-Maru	11,000
Texas-Maru	11,000
Tamatsu-Maru	6,600
Eifuku-Maru	9,100
Kifuku-Maru	9,100
Toyofuku-Maru	9,000
Raifuku-Maru	9,100
Keifuku-Maru	9,100
Washington-Maru	9,100
Tokufuku-Maru	9,100
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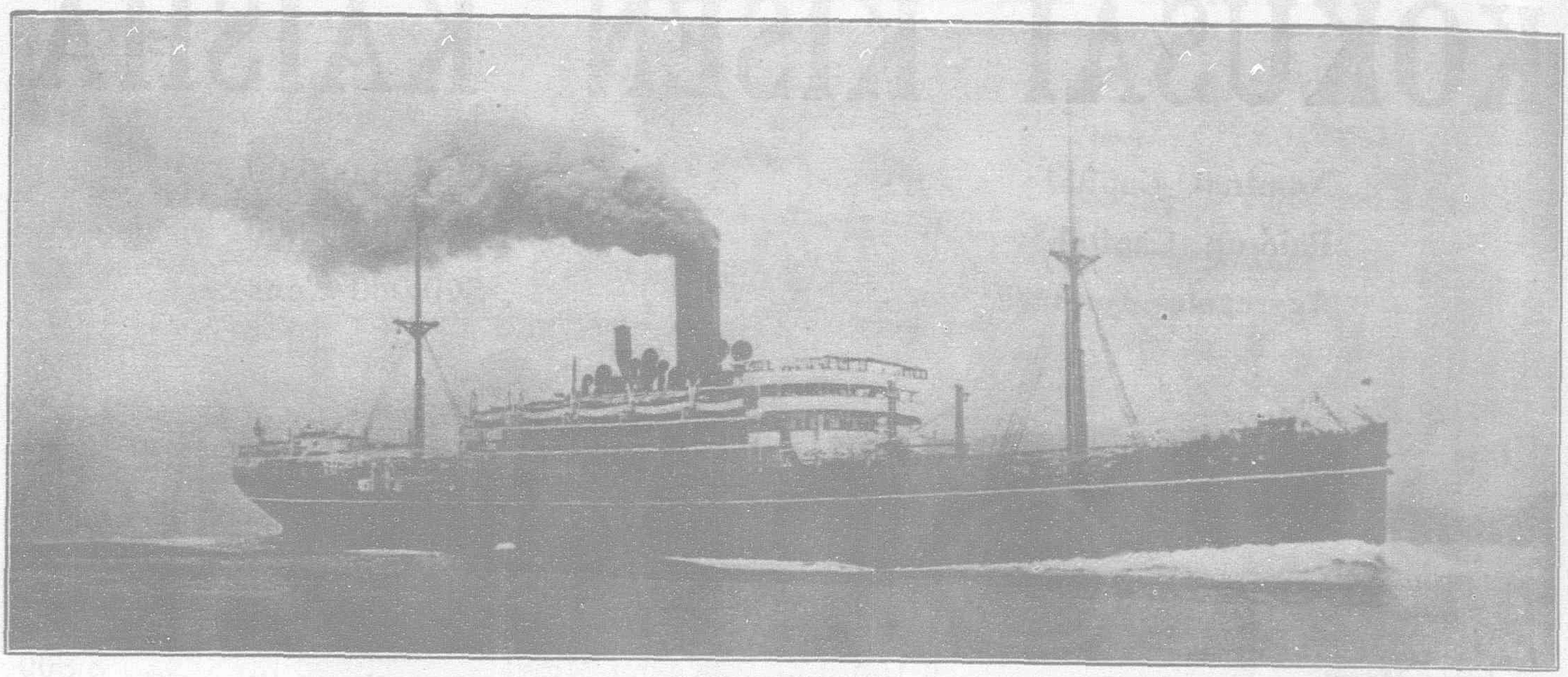

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(MONTHLY) CALCUTTA, MADRAS, COLOMBO, SUEZ, PORT SAID, ALGIERS AND NEW YORK.

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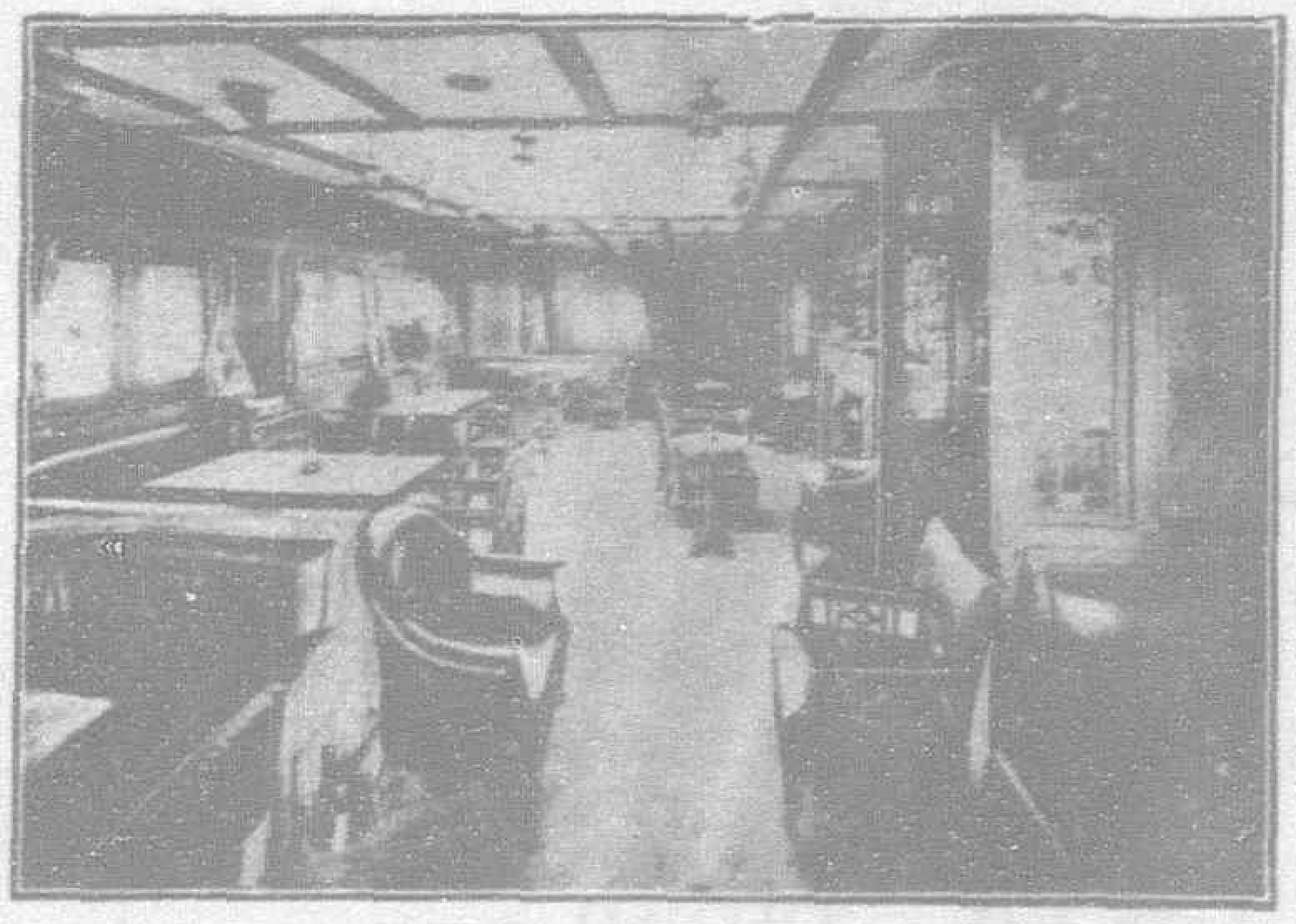
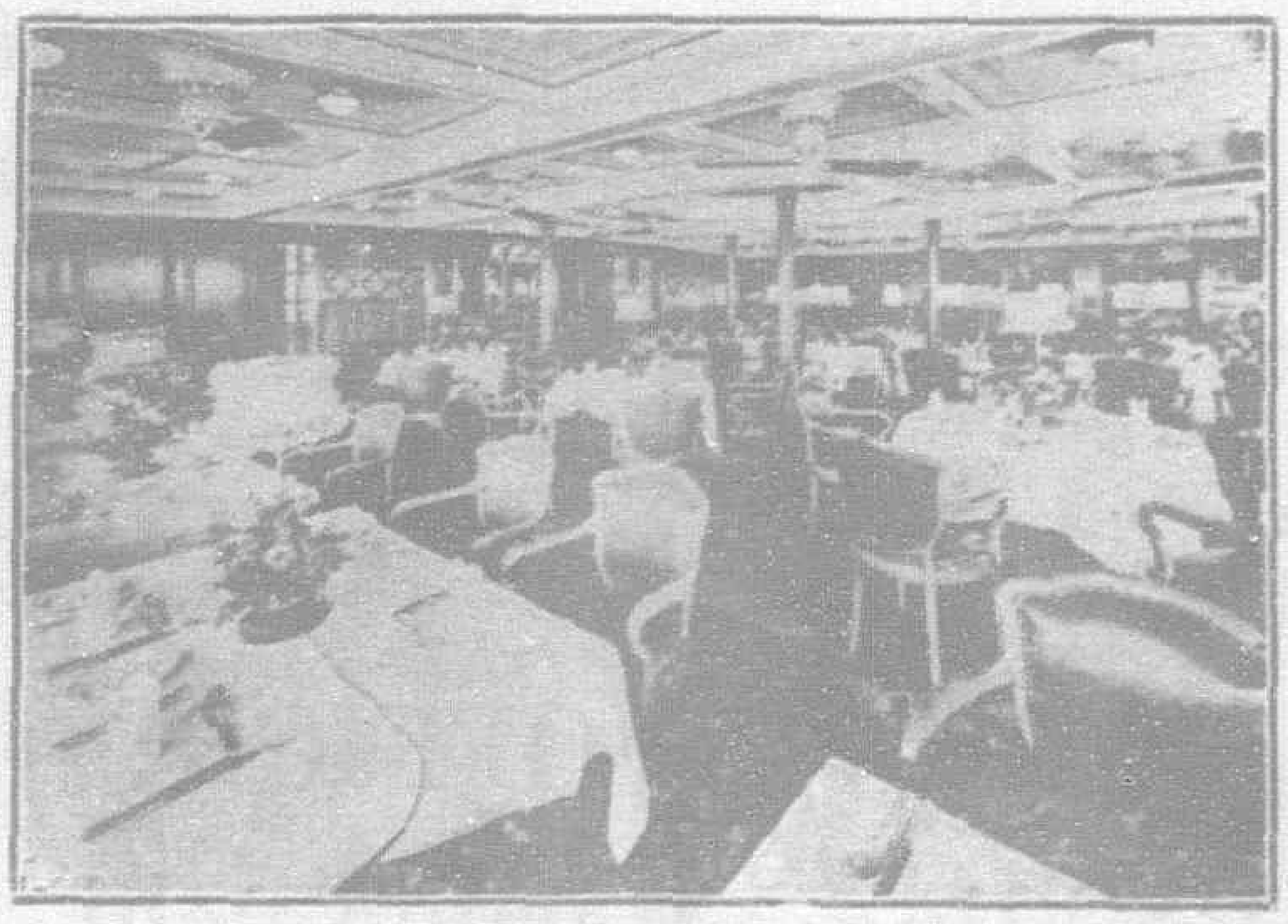
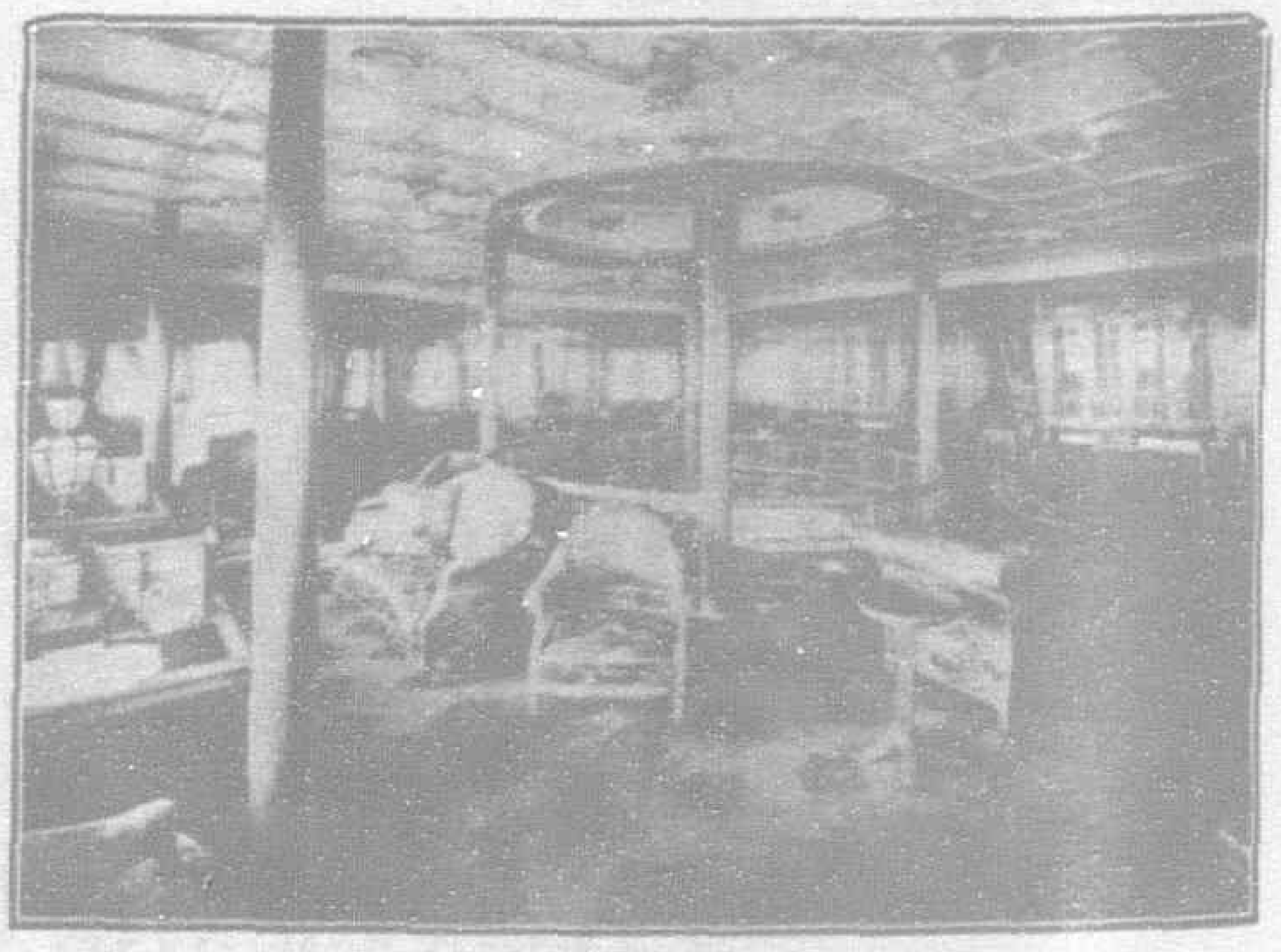


Smoking Room



Dining Saloon



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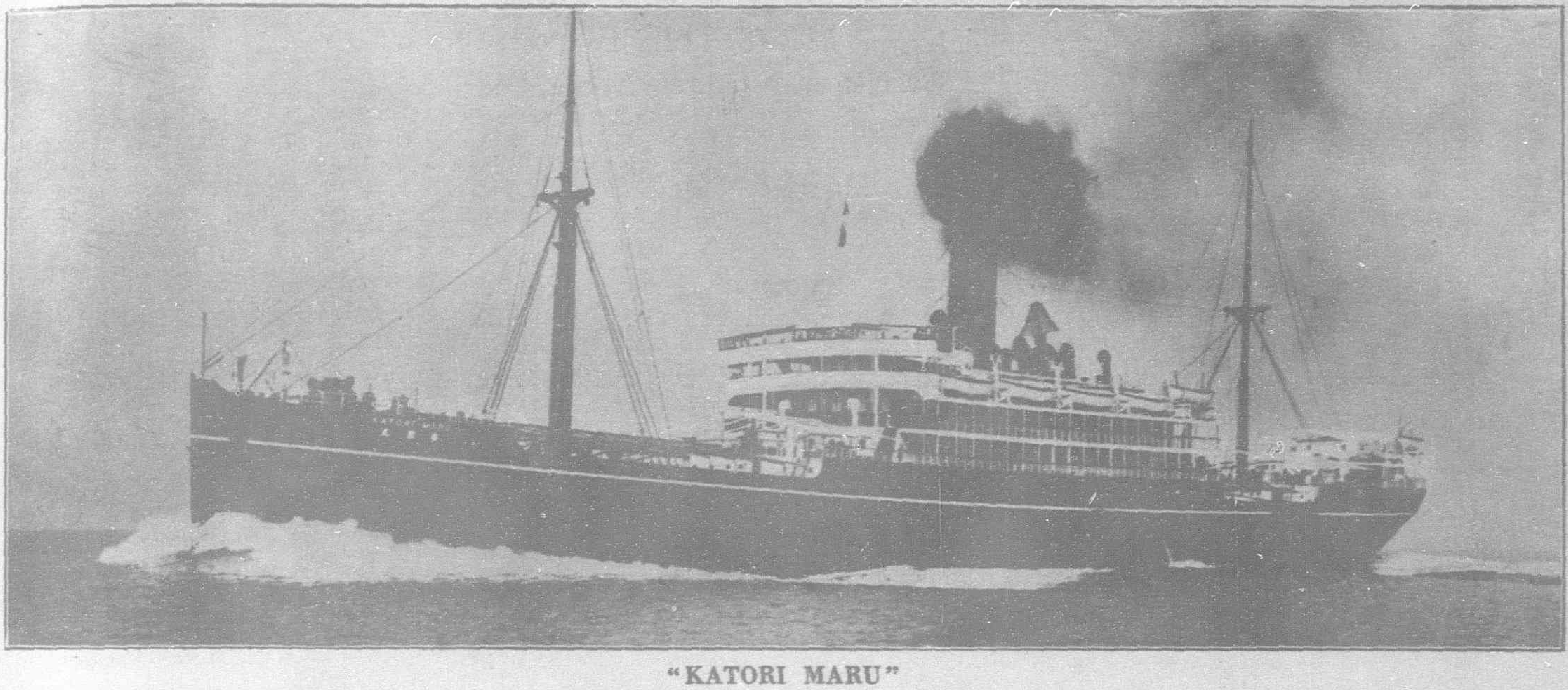

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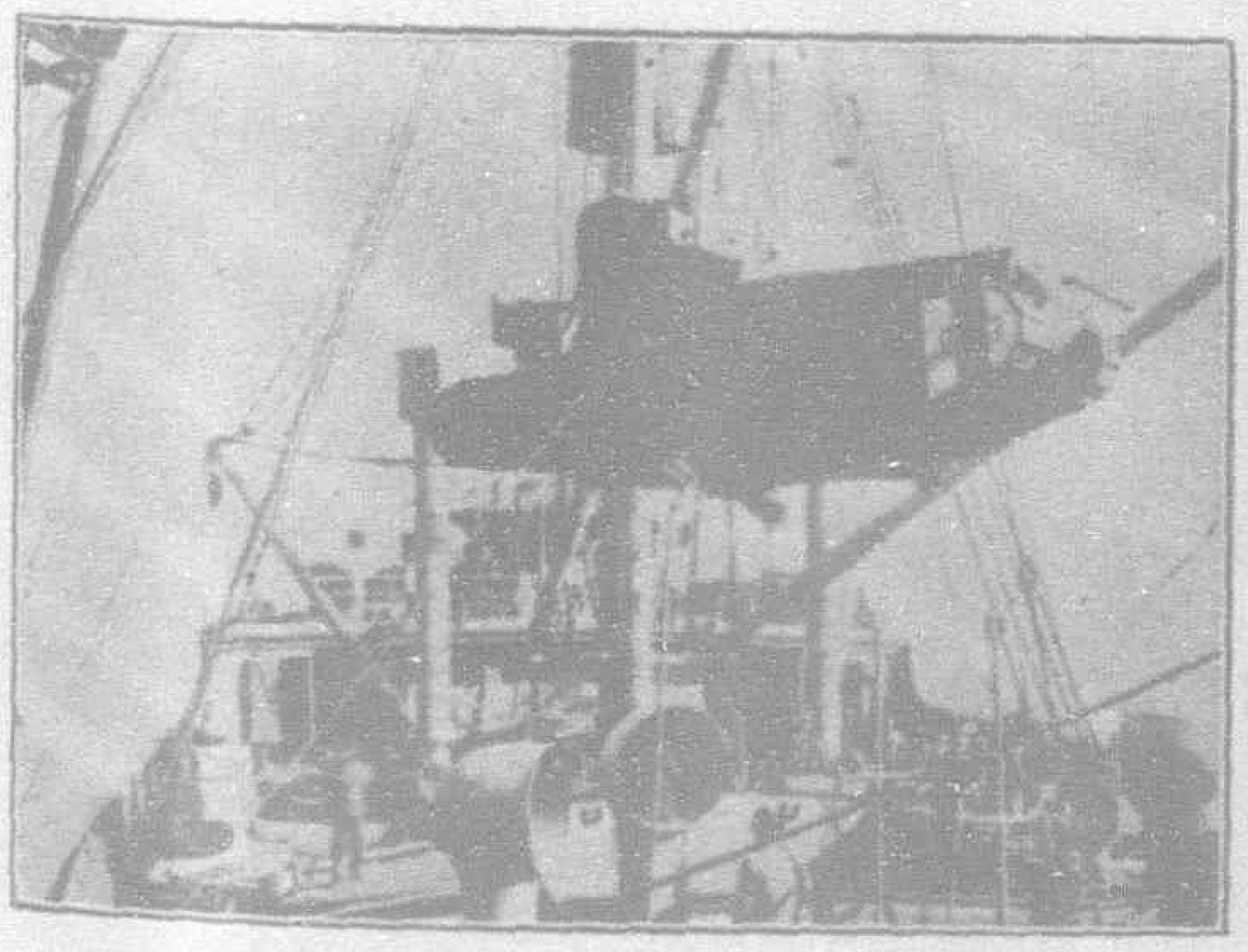
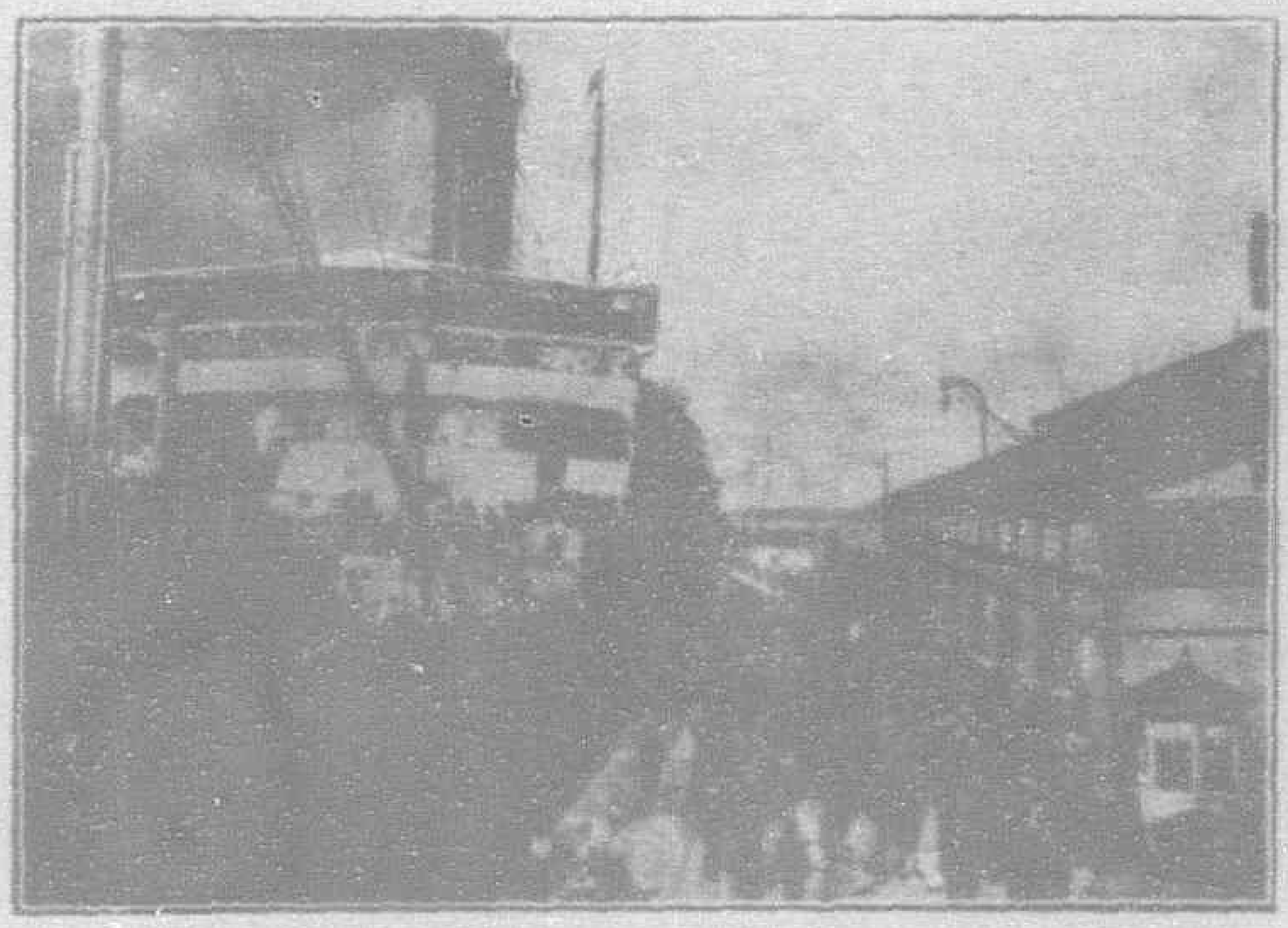
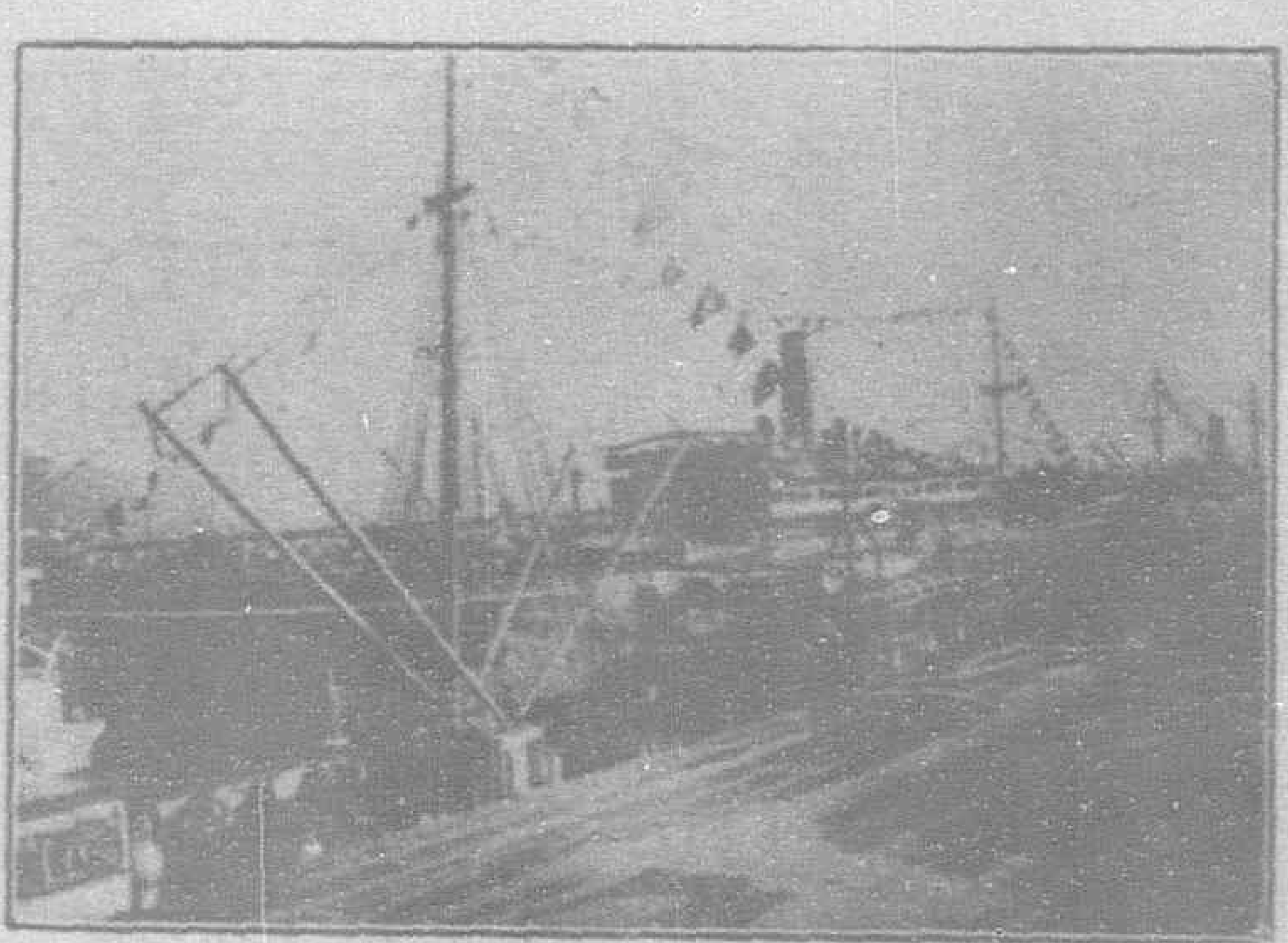


Landing a Tank



Dock at Yokohama



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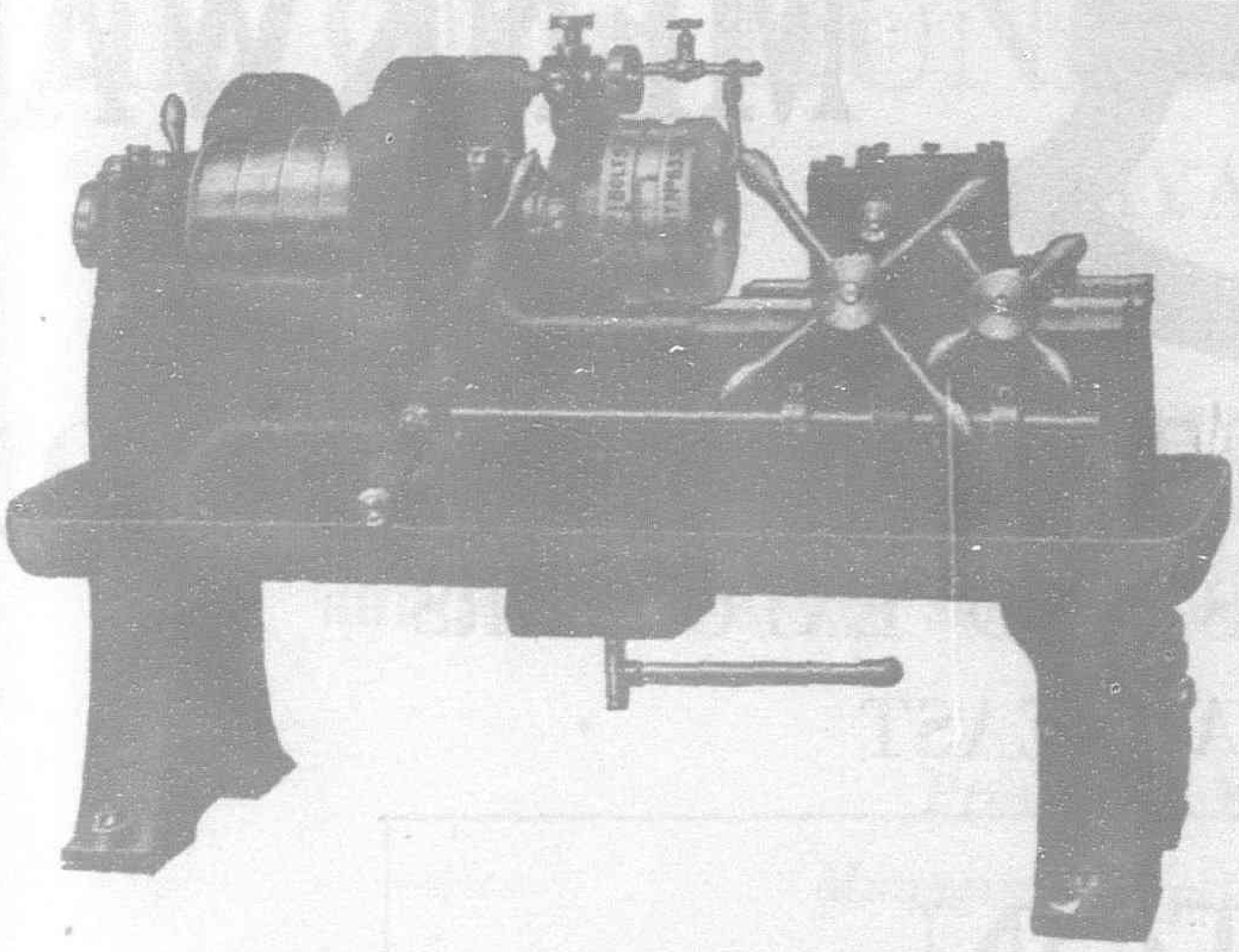

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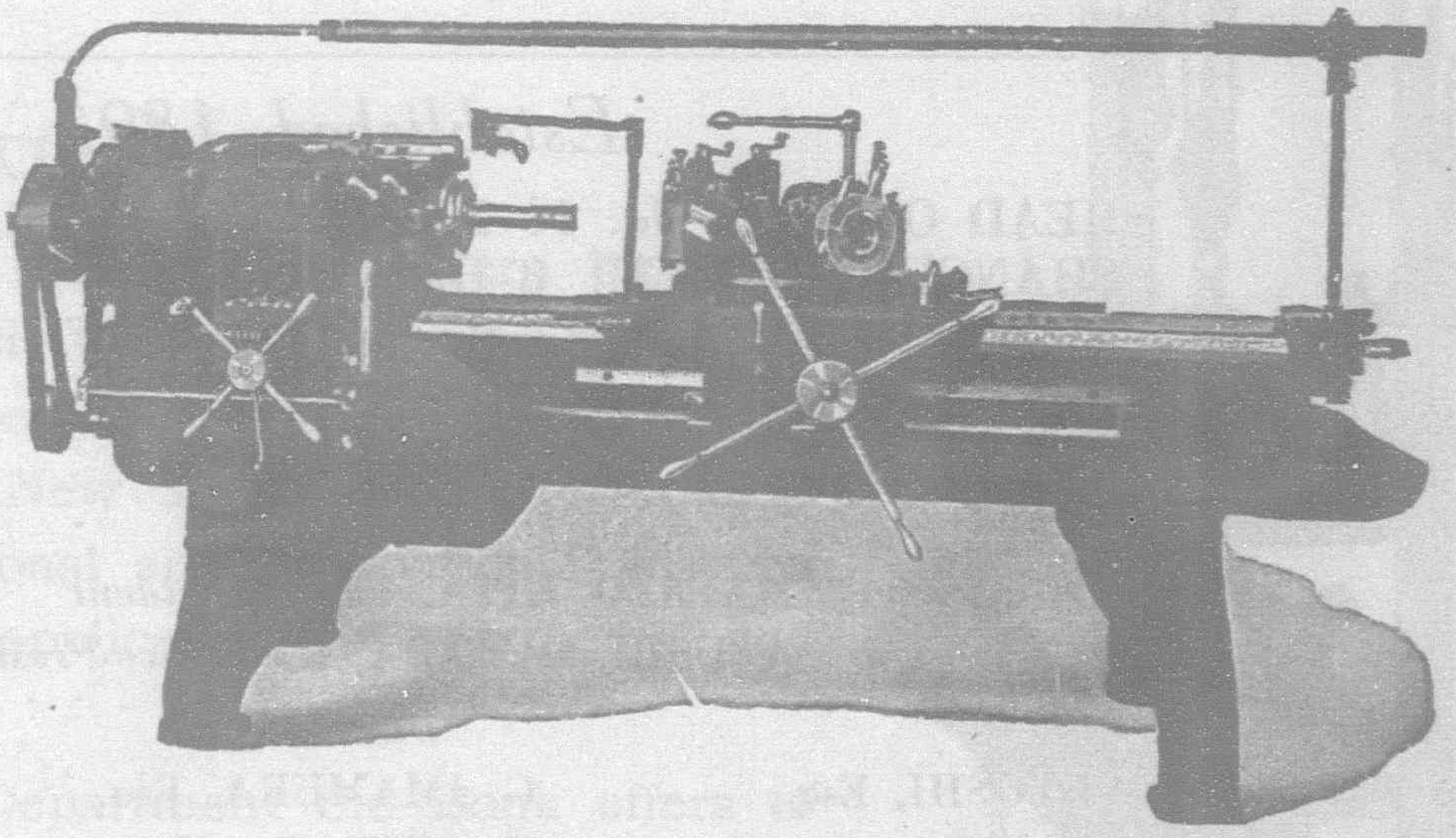

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Reserve Funds	Yen 26,825,000.00

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The City Investing Building, 165 Broadway, New York City

LONDON REPRESENTATIVE :

Gresham House, 24 Old Broad Street, London, E. C. 2

Correspondents:

San Francisco, Seattle, New York, London, Paris and in other commercial centers throughout the world

International Banking Corporation

CAPITAL, SURPLUS AND UNDIVIDED PROFITS: G. $14,000,000

OWNED BY THE NATIONAL CITY BANK OF NEW YORK

HEAD OFFICE: 60 WALL STREET, NEW YORK
LONDON OFFICE: 36 BISHOPSGATE, E.C.
LYONS OFFICE: 27 PLACE TOLOZAN
SAN FRANCISCO OFFICE: 232 MONTGOMERY STREET

BRANCHES:

- CHINA
  - SHANGHAI
  - PEKING
  - TIENTSIN
  - HANKOW
  - HARBIN
  - HONGKONG
  - CANTON
- DOMINICAN REPUBLIC
  - SANTO DOMINGO
  - SANCHEZ
  - SAN FRANCISCO DE MACORIS
  - SAN PEDRO DE MACORIS
  - SANTIAGO
  - PUERTO PLATA
  - BARAHONA
  - LA VEGA
- INDIA
  - BOMBAY
  - CALCUTTA
  - RANGOON
- JAPAN
  - YOKOHAMA
  - KOBE
- JAVA
  - BATAVIA
  - SOURABAYA
- PANAMA
  - PANAMA
  - COLON
- PHILIPPINES
  - MANILA
  - CEBU
- SPAIN
  - BARCELONA
  - MADRID
- STRAITS SETTLEMENTS
  - SINGAPORE

BRANCHES OF THE NATIONAL CITY BANK OF NEW YORK

- ARGENTINA
  - BUENOS AIRES
  - ROSARIO
- BELGIUM
  - ANTWERP
  - BRUSSELS
- BRAZIL
  - PERNAMBUCO
  - RIO DE JANEIRO
  - SANTOS
  - SAO PAULO
- CHILE
  - SANTIAGO
  - VALPARAISO
- CUBA
  - HAVANA AND 22 BRANCHES
- ENGLAND
  - LONDON
- ITALY
  - GENOA
- PERU
  - LIMA
- PORTO RICO
  - PONCE
  - SAN JUAN
- RUSSIA
  - MOSCOW } Temporarily Closed
  - PETROGRAD }
- URUGUAY
  - MONTEVIDEO
- VENEZUELA
  - CARACAS

Commercial and Travellers' Letters of Credit, Bills of Exchange and Cable Transfers bought and sold. Current accounts opened and Fixed Deposits in local and foreign currencies taken at rates that may be ascertained on application to the Bank.

N. S. MARSHALL, *Manager.*

1A KIUKIANG ROAD.

BANQUE DE L'INDO-CHINE

Capital	**Frs. 72,000,000**
Reserves	**„ 70,000,000**

HEAD OFFICE: 15 BIS RUE LAFFITTE, PARIS.

Succursales et Agencies:

Bangkok
Battambang
Canton
Djibouti
Haiphong
Hankéou
Hanoi
Hongkong
Mongtze
Nouméa
Papeete
Peking
Pnom-Penh
Pondichery
Saigon
Shanghai
Singapore
Tientsin
Tourane

Bankers:

IN FRANCE: Comptoir National d'Escompte de Paris, Credit Lyonnais; Banque de Paris et des Pays-Bas; Crédit Industriel et Commercial Société Générale.

IN LONDON: The National Provincial and Union Bank of England, Ltd.; Comptoir National d'Escompte de Paris; Crédit Lyonnais.

The Shanghai Agency undertakes all banking operations and exchange business; grants credits on goods and approved securities and receives deposits on current and fixed deposits according to arrangement.

L. ARDAIN, *Manager.*

The First National Bank of Boston

Transacts commercial banking business of every nature

Correspondence Solicited

Capital, Surplus and Profits

$37,500,000

SOUTH AMERICA

We offer a complete banking service in the following countries, special attention being given to the handling of collections.

HEAD OFFICE:
MONTREAL, CANADA

ARGENTINE
Buenos Aires (2 Branches).

BRAZIL
Rio de Janeiro, Santos, Sao Paulo.

URUGUAY
Montevideo.

VENEZUELA
Caracas, Ciudad Bolivar. Maracaibo.

COLOMBIA
arranquilla.

BR. GUIANA
Georgetown, Rose Hall, New Amsterdam.

Also 99 Branches in
CUBA, PORTO RICO, DOMINICAN REPUBLIC, HAITI, COSTA RICA, BR. HONDURAS, BRITISH WEST INDIES and FRENCH WEST INDIES

618 Branches throughout CANADA & NEWFOUNDLAND

LONDON
Princes St., E.C.

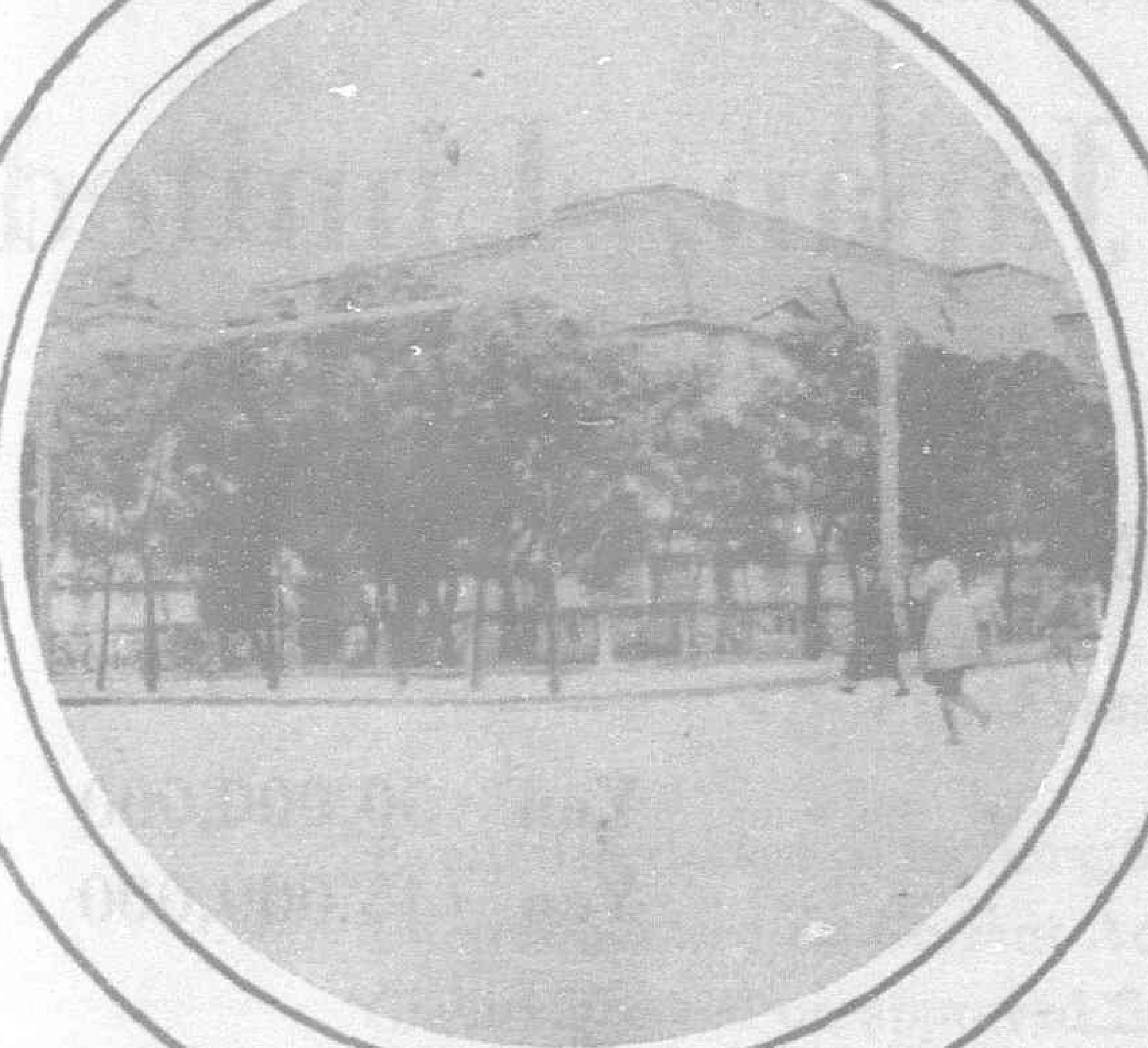
PARIS
28, Rue du Quatre-Septembre.

NEW YORK
68, William St

BARCELONA
Plaza de Cataluna 6.

THE ROYAL BANK OF CANADA

CA PIAL PAID UP & RESERVES $41.000,000 GOLD
RESOURCES - - - - $530,000,000 GOLD



THE

BANK OF TAIWAN LTD.

INCORPORATED BY SPECIAL IMPERIAL CHARTER, 1899

Capital Subscribed	Yen	60,000,000
Capital Paid-up	,,	45,000,000
Reserve Funds	,,	9,680,000

President: KOJURO NAKAGAWA, Esq. Vice-President: SHUNROKURO MORI, Esq.

DIRECTORS:

TSUNEKICHI IKEDA, Esq.
GUNJI KAWASAKI, Esq.
KUMEMATSU MORINAGA, Esq.
MASUMI ESAKI, Esq.
TADASU HISAMUNE, Esq.

Head Office: TAIPEH, FORMOSA (TAIWAN)

BRANCHES:

JAPAN: Tokio (General Affairs Department), Kobe, Moji, Osaka, Yokohama.
TAIWAN: Keelung, Tainan, Takow, and 11 other points.
CHINA: Amoy, Canton, Foochow, Hankow, Kiukiang, Shanghai, Swatow.
OTHERS: Bangkok, Batavia, Bombay, Hongkong, London, New York, Semarang, Singapore, Soerabaya.

AGENTS AND CORRESPONDENTS:
In the Principal Cities and Towns throughout the World.

LONDON BANKERS:
BARCLAYS BANK, LTD. LLOYD'S BANK, LTD. LONDON COUNTY WESTMINSTER & PARR'S BANK, LTD.

TOKYO BRANCH:
No. 1, Eiraku-cho Ni-chome, Kojimachi-ku.
Telegraphic Address: "TAIWANGINK."
Phone Nos. 1060, 1061, 1062, 1063, 1064, 1065, 1066, 446, 447, 448 and 449, Marunouchi.

Interest allowed on Fixed Deposits, and Current Accounts on terms which may be ascertained on application. Most favourable terms are granted for Petty Current Accounts.

Every description of Exchange and General Banking business transacted.

Special facilities are available for exchange business on China, Straits Settlements, East Indies, Australia, Great Britain, Russia, America, Canada, South Africa, etc.

Industrial Bank of Japan, Limited

(NIPPON KOGYO GINKO)

Incorporated by Special Charter in 1902 to Encourage Foreign Investments

CAPITAL SUBSCRIBED - - - - - -	Yen 50,000,000
CAPITAL PAID-UP - - - - - - -	Yen 45,000,000

HEAD OFFICE:

MARUNOUCHI, TOKYO. CABLES "KOGIN," TOKYO

BRANCHES:

TOKYO: NIHONBASHI
OSAKA: KORAIBASHI
KOBE: NAKAMACHI

H. HIJIKATA, Esq., President
K. IYANAGA, Esq., Director
Y. ONO, Esq., Vice-President
T. IWASA, Esq., Director
KOZO MATSUMOTO, Esq.

AUDITORS:

NAGATANE SOMA, Esq.
KINICHI KAWAKAMI, Esq.
KINTARO HATTORI, Esq.
TAICHI OHBA, Esq.

All descriptions of general banking, exchange, both foreign and domestic, and trust and corporation financial business transacted.

Correspondents in the principal cities at home, and in London, Paris, New York, and San Francisco.

BUSINESS TRANSACTED:

1.—Loans on the security of public bonds of debentures and shares, estates (Zaidan), specified land and buildings.
2.—Subscription and underwriting public bonds or debentures.
3.—Deposits and safe custody of valuables.
4.—Trust company business.
5.—Discounting of bills.
6.—Foreign exchange business.
7.—Other banking business sanctioned by the Minister of State for Finance in accordance with Law of Ordinance.

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

CHIHLI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan

SZECHUAN PROVINCE.—Chungking.

ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatai, Liaoyang, Harbin, Chinhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.

THE SUMITOMO GOSHI-KAISHA

OSAKA, JAPAN

OWNERS OF BESSHI COPPER MINE, COAL MINES, SILVER AND GOLD MINES, ETC.

MANUFACTURERS OF

Tubes, Plates, Sheets and Bars of Copper, Brass, Bronze and other Alloys, Solid and Drawn Steel Tubes, Nails, Etc.—Superphosphate and Composite, Manure, Sulphuric and Nitric Acid, etc.

GENERAL WAREHOUSE AND BANKING BUSINESS

WORKS AND DEPARTMENTS

Warehouses	Osaka, Kobe & Tokyo
Mining Offices	Besshi, Wakamatsu, Sapporo & Ohgayu
WORKS:	
Copper Works	Osaka & Amagasaki
Fertilizer Works	Niihama
Sales Departments	Osaka, Kobe, Tokyo, Kure, Yokosuka, Hakata, Shanghai, Hankow and Tientsin

---

THE SUMITOMO STEEL WORKS, LTD.

OSAKA, JAPAN

President: Baron K. SUMITOMO

MANUFACTURERS OF

Steel Ingots, Steel Forgings, Steel and Iron Castings of Every Description for Railways, Shipbuilding Yards, Mines, Hydraulic Electric and Other Engineering Works, etc., etc.

THE SUMITOMO ELECTRIC & CABLE WORKS, LIMITED

OSAKA, JAPAN

President: Baron K. SUMITOMO

MANUFACTURERS OF

Copper, Brass, Bronze and Nickel Wires and Strips, Trolley Wires, Insulated Wires and Cables of Every Description for Telephone, Telegraph, Lighting, Power Transmission, etc., etc.

THE SUMITOMO BANK, LIMITED

Head Office: OSAKA, JAPAN
Cable Address: "SUMITBANK"
President: Baron K. SUMITOMO
Established March, 1912
(Successors to The SUMITOMO BANK)

Capital Subscribed	Yen 70,000,000	Reserve Fund	Yen 20,200,000
Capital Paid-up	„ 40,000,000	Deposits	„ 38,100,000

(as on 20th July, 1921)

Head Office: Kitahama, Osaka

City Offices: Semba, Bingomachi, Nakanoshima, Dotonbori, Kawaguchi, Tenma, Nipponbashi.

Home Branches: Tokyo (Tokyo, Toriaburacho, Fukagawa, Shinbashi, Asakusa), Yokohama, Nagoya, Kyoto (Kyoto and Nishijin), Kobe (Kobe and Hyogo), Onomichi, Niihama, Kure, Hiroshima, Yanai, Shimonoseki, Moji, Wakamatsu, Kokura, Hakata and Kurume.

Foreign Branches: Shanghai, Hankow, Bombay, London, New York and San Francisco.

Agents: The Sumitomo Bank of Hawaii, Ltd., Honolulu, Lloyds Bank, Ltd., London, National City Bank of New York, New York.

Correspondents: In all important places at home and abroad.

The Bank buys, sells and receive for collection Drafts and Telegraphic Transfers, issues Commercial and Travellers Letters of Credit available in all important parts of the world, besides doing general Banking business.

THE

MITSUBISHI BANK,

LIMITED

CAPITAL SUBSCRIBED - Yen 50,000,000
CAPITAL PAID-UP - - - Yen 30,000,000

PRESIDENT:

Baron Koyata Iwasaki

MANAGING DIRECTORS:

Mr. Manzo Kushida	Mr. Mikitaro Kikuchi
Mr. Kiyoshi Sejimo	Mr. Takeo Kato

HEAD OFFICE:

No. 1 Yayesucho Itchome, Kojimachi-ku,
Tokyo, Japan.

BRANCH OFFICES:

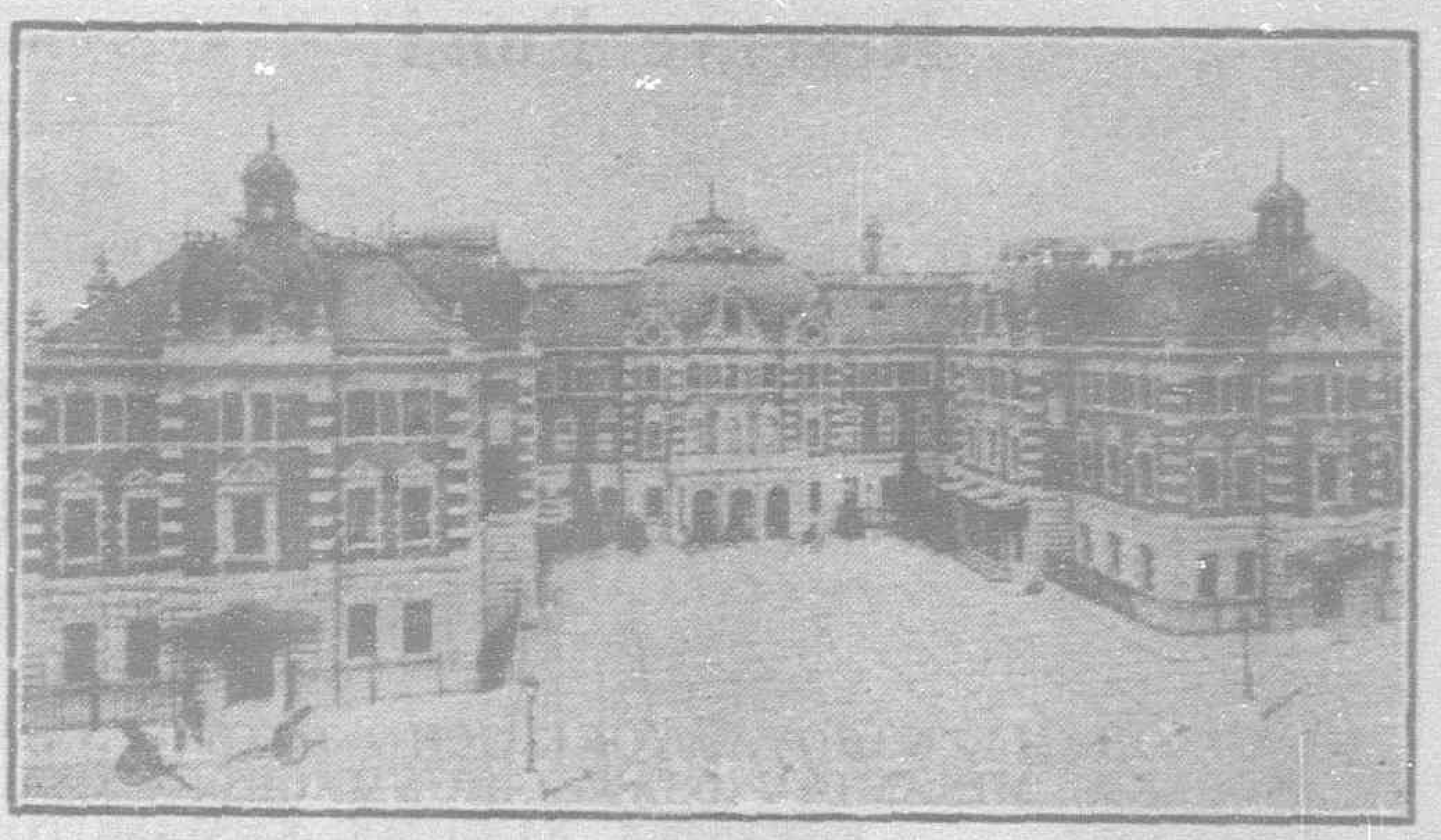
Fukagawa (Tokyo), Marunouchi (Tokyo), Nihombashi (Tokyo), Osaka, Nakanoshima (Osaka), Kobe, Kyoto, Nagoya, Shanghai, New York and London.

General Banking and Exchange Business

Agents for Hongkong and Shanghai Banking Corporation

THE MITSUI BANK, LTD.

The Oldest Bank in Japan, Founded in 1673



Capital Subscribed...	Y. 100,000,000.00
Capital Paid-Up......................	Y. 60,000,000.00
Reserve Fund (July 1921)......	Y. 28,000,000.00

HEAD OFFICE:

No. 1 Suruga-cho, Nihonbashi-ku,
TOKYO

BOARD OF DIRECTORS:

GENYEMON MITSUI, Esq. (*President*); SEIHIN IKEDA, Esq., UMEKICHI YONEYAMA, Esq., NAOJIRO KIKUMOTO, Esq. and OTOHIKO MAJIMA, Esq. (*Managing Directors.*)

TOMITARO HARA, Esq., KANETARO KISHIMOTO, Esq., HIROKICHI KAMESHIMA, Esq. and KIKUSABURO FUKUI, Esq. (*Directors*).

Branches:

NIHONBASHI (Tokyo), OTARU, YOKOHAMA, NAGOYA, KYOTO, OSAKA, NISHI (Osaka), KAWAGUCHI (Osaka), NAKANOSHIMA (Osaka), KOBE, HIROSHIMA, SHIMONOSEKI, MOJI, WAKAMATSU, FUKUOKA, NAGASAKI, SHANGHAI.

Foreign Agents:

London:	Barclays Bank, Ltd. London Joint City & Midland Bank, Ltd.
New York:	The National City Bank of New York. The Chase National Bank. Bankers Trust Co.
Paris:	Banque de l'Union Parisienne. Comptoir National d'Escompte de Paris.
Bombay:	National Bank of India, Ltd.

THE DAI-ICHI GINKO, LTD.

(FORMERLY THE FIRST NATIONAL BANK)

ESTABLISHED 1873

Subscribed Capital - - - -	Yen 50,000,000.00
Paid-Up Capital - - - -	Yen 36,350,000.00
Reserve Fund - - - -	Yen 29,500,000.00

Y. SASAKI, *President*

K. ISHII, *Managing Director.* Y. NOGUCHI, *Managing Director.* S. SUGITA, *Managing Director.*

HEAD OFFICE:

No. 1 KABUTO-CHO, NIHONBASHI-KU, TOKYO.

T. AKASHI, *Manager*

CITY BRANCHES:

ISECHO, SHIN-OSAKACHO, FUKAGAWA, MARUNOUCHI.

HOME BRANCHES:

YOKOHAMA, NAGOYA, YOKKAICHI, KYOTO, NISHIJIN (KYOTO), GOJO (KYOTO), FUSHIMI, OSAKA, NISHIKU (OSAKA), MINAMIKU (OSAKA), HONMACHI (OSAKA), KOBE, HYOGO, HIROSHIMA, SHIMONOSEKI, CHOFU, MOJI, FUKUOKA, KURUME, KUMAMOTO, HAKODATE, OTARU, SAPPORO, MURORAN.

BRANCHES IN COREA:

SEOUL, FUSAN.

LONDON & NEW YORK BANKERS:

London
- London County Westminster & Parr's Bank, Ltd.
- The London Joint City & Midland Bank, Ltd.
- The Yokohama Specie Bank, Ltd.

New York
- The National City Bank of New York.
- The National Bank of Commerce in New York.
- The Yokohama Specie Bank, Ltd.

CORRESPONDENTS:

The Bank, in addition to its own Branches, has numerous Agencies or Correspondents in the principal Cities and Towns at Home and Abroad.

THE EAST ASIA INDUSTRIAL

COMPANY, LIMITED

(TOA KOGYO KABUSHIKI KAISHA)

TOKYO

ESTABLISHED 1909

FINANCIERS AND CONTRACTORS

K. ARAI, Esq., *President*

R. SHIRAIWA, Esq., *Managing Director*

Subscribed Capital	Yen 20,000,000
Paid-up Capital	„ 11,500,000

Branches: SHANGHAI, PEKING, HANKOW.

Hongkong and Shanghai Banking Corporation

Paid-up Capital	$20,000,000
Reserve Funds: Sterling	£4,500,000
Silver	$21,500,000
Reserve Liability of Proprietors	$20,000,000

Court of Directors:

G. T. M. EDKINS, Esq.
Chairman
G. M. DODWELL, Esq.
Deputy Chairman
D. G. M. BERNARD, Esq.
A. S. GUBBAY, Esq.
P. H. HOLYOAK, Esq.
Hon. Mr. A. O. LANG
E. V. D. PARR, Esq.
W. L. PATTENDEN, Esq.
J. A. PLUMMER, Esq.
H. P. WHITE, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . . Hon. Mr. A. G. STEPHEN

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY
BANGKOK
BATAVIA
BOMBAY
CALCUTTA
CANTON
CHEFOO
COLOMBO
DAIREN
FOOCHOW
HAIPHONG
HANKOW
HARBIN
ILOILO
IPOH
JOHORE
KOBE
KUALA LUMPUR
LONDON
LYONS
MALACCA
MANILA
NAGASAKI
NEW YORK
PEKING
PENANG
RANGOON
SAIGON
S. FRANCISCO
SHANGHAI
SINGAPORE
SOURABAYA
TIENTSIN
TSINGTAO
VLADIVOSTOCK
YOKOHAMA

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

G. H. STITT, *Manager.*

THE JUGO GINKO, Ltd.

(THE FIFTEENTH BANK)

TOKYO, JAPAN

Telegrams: "Jugoginko, Tokio"

Capital Subscribed Y. 100,000,000 Capital Paid-Up Y. 49,750,000 Reserve Funds Y. 17,478,600

President:
HON. IWAO MATSUKATA

Vice-President:
MASAYASU NARUSE, Esq.

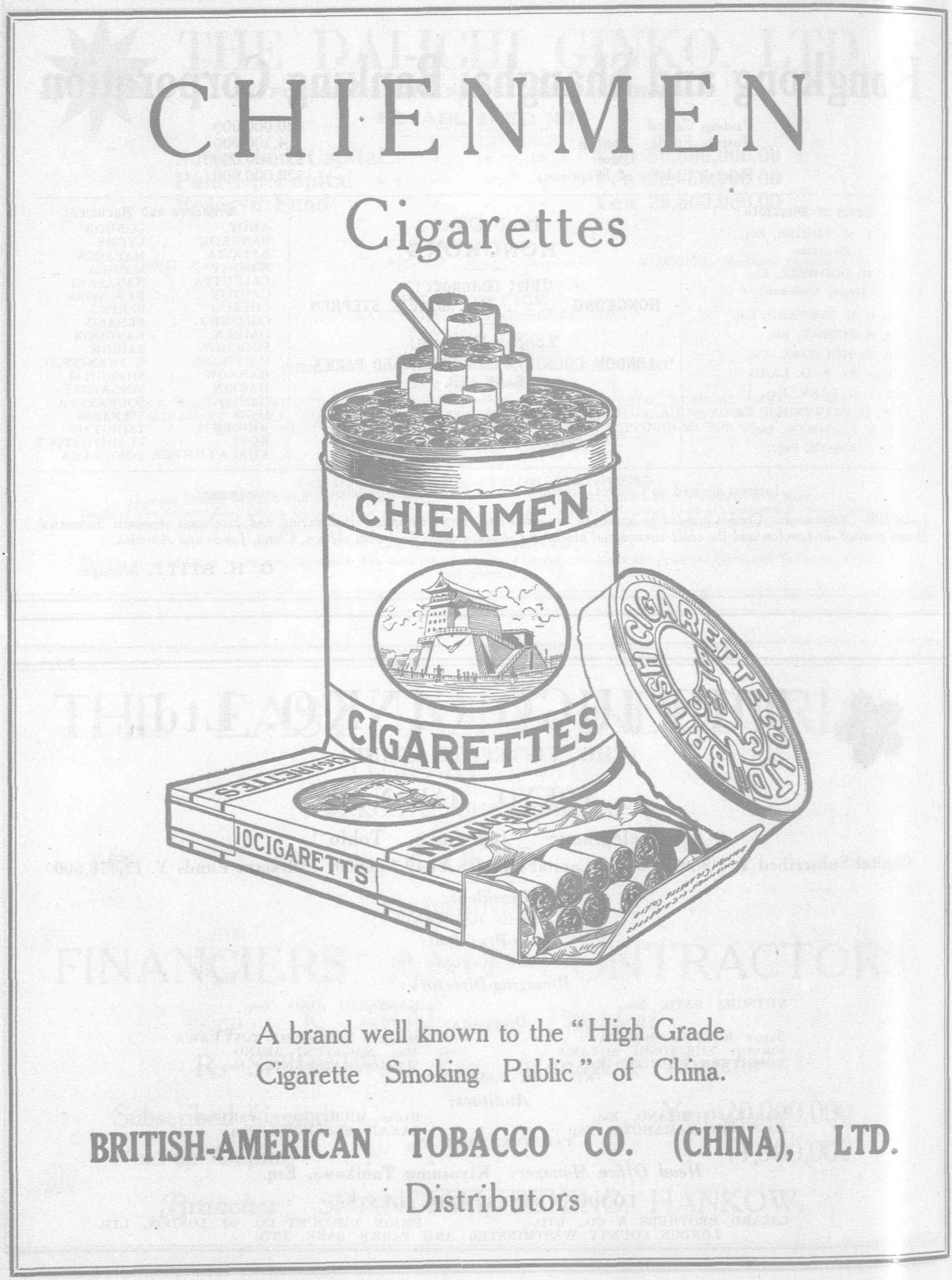
Managing-Directors:
YUTSUHA SATO, Esq.
KANESATO AIKO, Esq.

Directors:
BARON KOKICHI SONODA
VISCOUNT YUKIYOSHI AOYAMA
YOSHITERU SHIMIZU, Esq.
MARQUIS YORIMICHI TOKUGAWA
HON. NAGAYUKI ASANO
MASAO MATSUKATA, Esq.
KIYOSUMI TANIKAWA, Esq.

Auditors:
MASAKAZU HISANO, Esq.
NAOYOSHI YAMAMOTO, Esq.
BARON MICHITOMO IWAKURA
TAKAJI SEKIGUCHI, Esq.
TAKAYUKI IMAI, Esq.

***Head Office Manager:* Kiyosumu Tanikawa, Esq.**

LONDON BANKS AND AGENTS:
LAZARD BROTHERS & CO., LTD.
UNION DISCOUNT CO. OF LONDON, LTD.
LONDON COUNTY WESTMINSTER AND PARR'S BANK, LTD.



CHIENMEN

Cigarettes

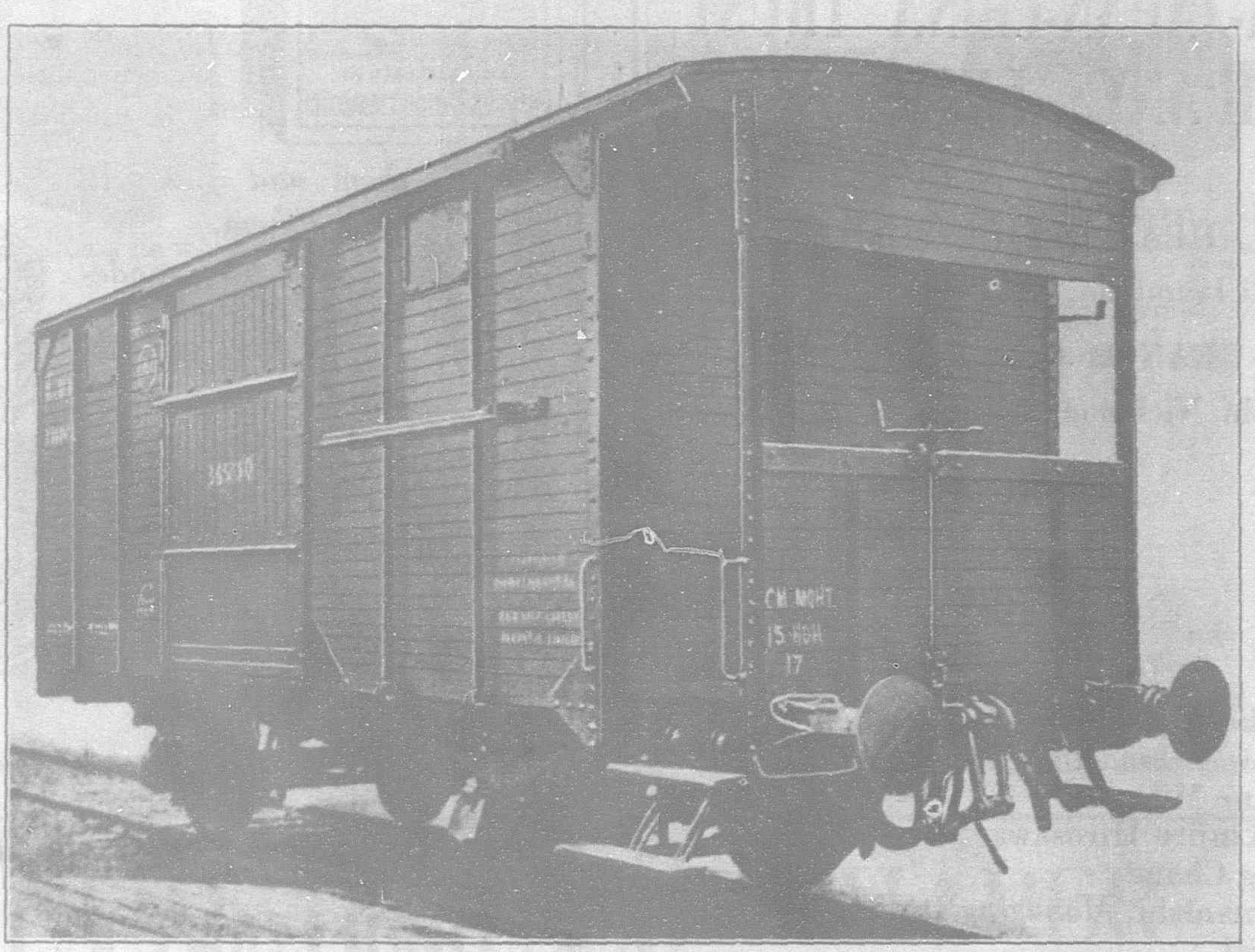
A brand well known to the "High Grade Cigarette Smoking Public" of China.

BRITISH-AMERICAN TOBACCO CO. (CHINA), LTD.

Distributors

FOR SALE AT AN ATTRACTIVE PRICE

600-1,200 Pood (43,338-lb. capacity) New Russian Standard Covered Goods Wagons Complete
Located in U.S. Ready for shipment.



GENERAL DIMENSIONS

Length over headstock	24′ 11$\frac{5}{16}$″
Wheel Base	13′ 1$\frac{1}{2}$″
Width, Inside	9′ 0″
Length, Inside	22′ 9″
Width over roofs at eaves	9′ 8″
Height from rail over roof	12′ 5$\frac{15}{16}$″
Length over buffers	28′ 10$\frac{3}{16}$″
Tare, complete	23,900-lb.
Gauge	5′ 0″

GENERAL DETAILS

Steel Underframe, Wood Body, Brake Platform, Cast Iron Wheels, Westinghouse Air Brakes, Russian Standard Hand Brakes and Draft Gear, M.C.B. Standard Journal Bearings and Wedges, Forged Steel Buffer Stems, Draw Bar Hooks and Screw Couplings. Wagons are designed to handle Merchandise, Troops or Horses.

PRICE ON REQUEST

BRIGGS & TURIVAS, INC.

IRON & STEEL MERCHANTS

Main Office: CHICAGO, Ill., U.S.A. Cable Address: "BRIGTURVAS"

We also offer 35 Russian Decapod Locomotives. Specifications furnished if desired

AMERICA-JAPAN-CHINA TRUST COMPANY, LIMITED

HEAD OFFICE:
6 Nakabashi Izumicho, Kyobashi-ku, Tokyo.

BRANCH OFFICE:
11 Imabashi Nichome, Higashiku, Osaka.

CAPITAL - - Y. 50,000,000.00

Directors:

Michitaka Sugawara, *Chairman*
Seiji Nawa, *Managing Director*
Toyotsune Mikami
Count Kinjiro Hirosawa
Wu Ting Chang
Kenji Imanishi, *Managing Director*
Taiji Arai
Seishichi Iwasaki
Saburosuke Fujisaki
F. N. Shea

Auditors:

Kanzo Matsuo, Standing
Toyohiko Kuki
Motosaburo Kaneko
Takayoshi Kondo

Councillors:

Raizo Kanda
Katsutaro Kamada

Principal Business of this Company as follows:

1. Financing of Domestic and Foreign Enterprises.
2. Underwriting Public Bonds, Debentures and other Securities.
3. Guaranteeing Loans, Debts and Credits.
4. Issuing Letters of Credit and Accepting Bills.
5. Assisting in the Organization of various enterprises and in the financial re-adjustment of Companies.
6. All other kinds of Trust Business.

Smoke! Smoke!! Smoke!!!

The "Tas Hee" & "Szy Hee" brands of cigarettes.

They are not to be surpassed in excellence, selected from the most superior tobaccos, they will be found pleasing smokes by all. Connoisseurs agree that they are not to be excelled for their fragrance

Try them and you will like them.

Obtainable at very moderate prices from most stores and stalls.

Manufactured by the
Canton Nanyang Brothers
Tobacco Co., Ltd.,
10 Dent Road

Head Office:
12 Nanking Road

中國南洋兄弟烟草有限公司啟

BRILLIANT Half Watt LAMPS

give MORE LIGHT, BETTER LIGHT at LESS COST than any vacuum lamp.

Call at our Show Room Nanking corner Honan Roads and we'll convince you.

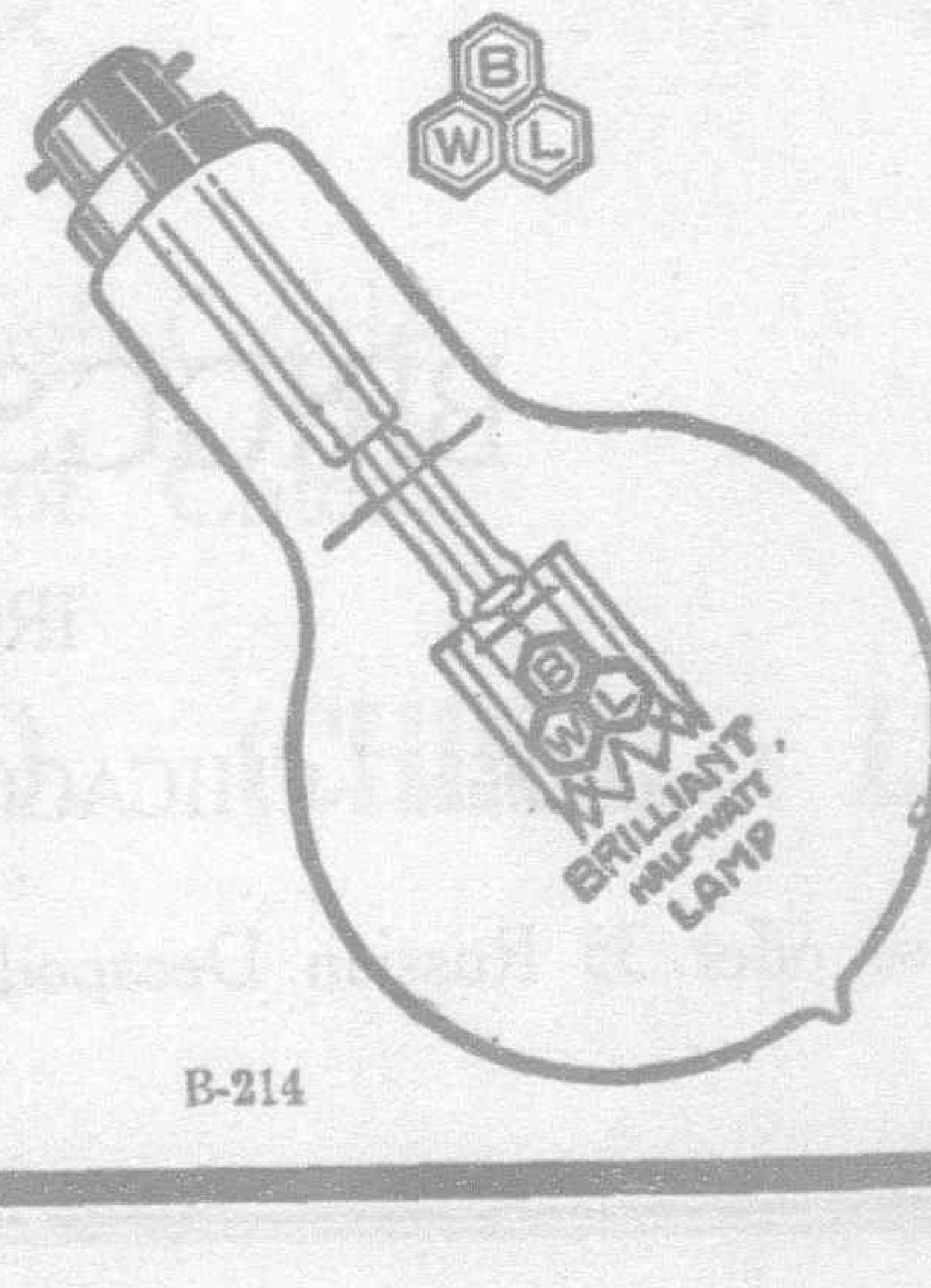
THE BRILLIANT ELECTRIC CO.

Dependable Suppliers of Everything Electrical.

博利安半華德電泡
加倍光明減半電費

博利安電料公司
上海廣東路一號
電話中央三二六七

B-214



Electric Cooking "HIGHLOW" Apparatus

No. 50. IRON. Loading 500 Watts. Weight 6lbs.

Thumb rest.
Strong Tip-up Stand.
Best Nickel-plated finish.

ELECTRIC COOKER. Total Loading 4 kw.

No. 60. ELECTRIC KETTLE. 750 Watts.
Polished Copper or Nickel-plated, 2 pints Capacity.

Elements are wound on clear ruby mica with nickel contacts taken direct to the terminals.

Heating and Cooking Apparatus for Domestic, Ship's and Restaurant use.

Catalogue on request to the Sole Makers:

Telegrams:
"Highlow, Glasgow"

Archibald Low & Sons, Ltd.
Merkland Works, Partick, Glasgow, Scotland

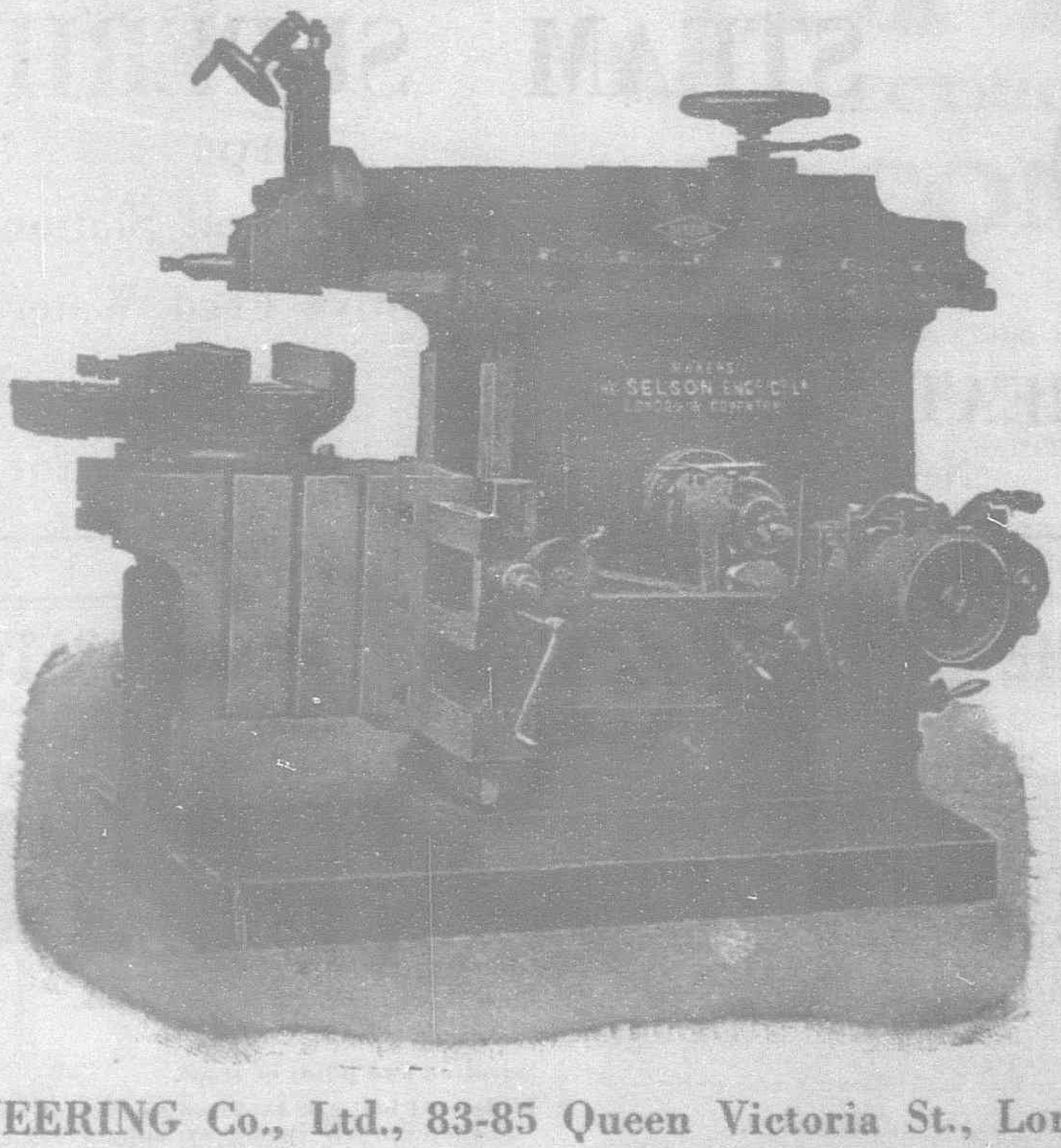
Code: A.B.C.

THE SELSON SHAPER

SELSON

stands for the Best.

Many repeat orders prove it.



SELSON

Sizes:
10, 13, 17, 21, 25, 30-in. stroke

Belt or Motor drive.

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Works: COVENTRY Cable Add.: SELSONEER, London
Makers of Lathes, Radial Drilling Machines and Engineers' Machine Tools generally. Also Small Tools.

ROPES WIRES AND NEEDLES

ROPE DEPARTMENT

Steel wire rope, Manila rope, White or tarred hemp rope, Trawl twine, Cotton rope and all other kinds of cordages, Steel wire and all other kinds of metallic wires.

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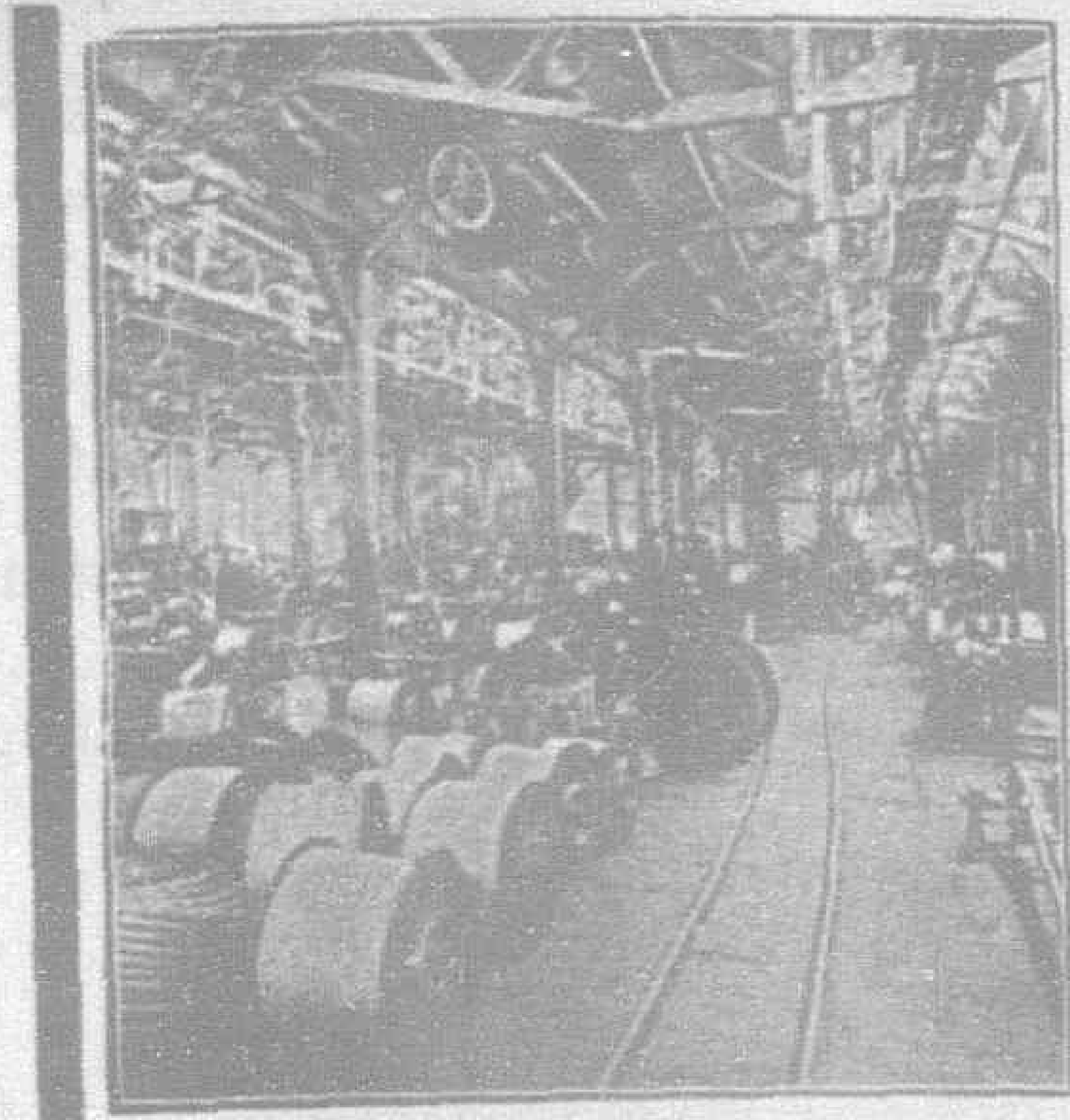
Sewing needle, Gramophone needle, Wire heald and all other kinds of wire work goods.



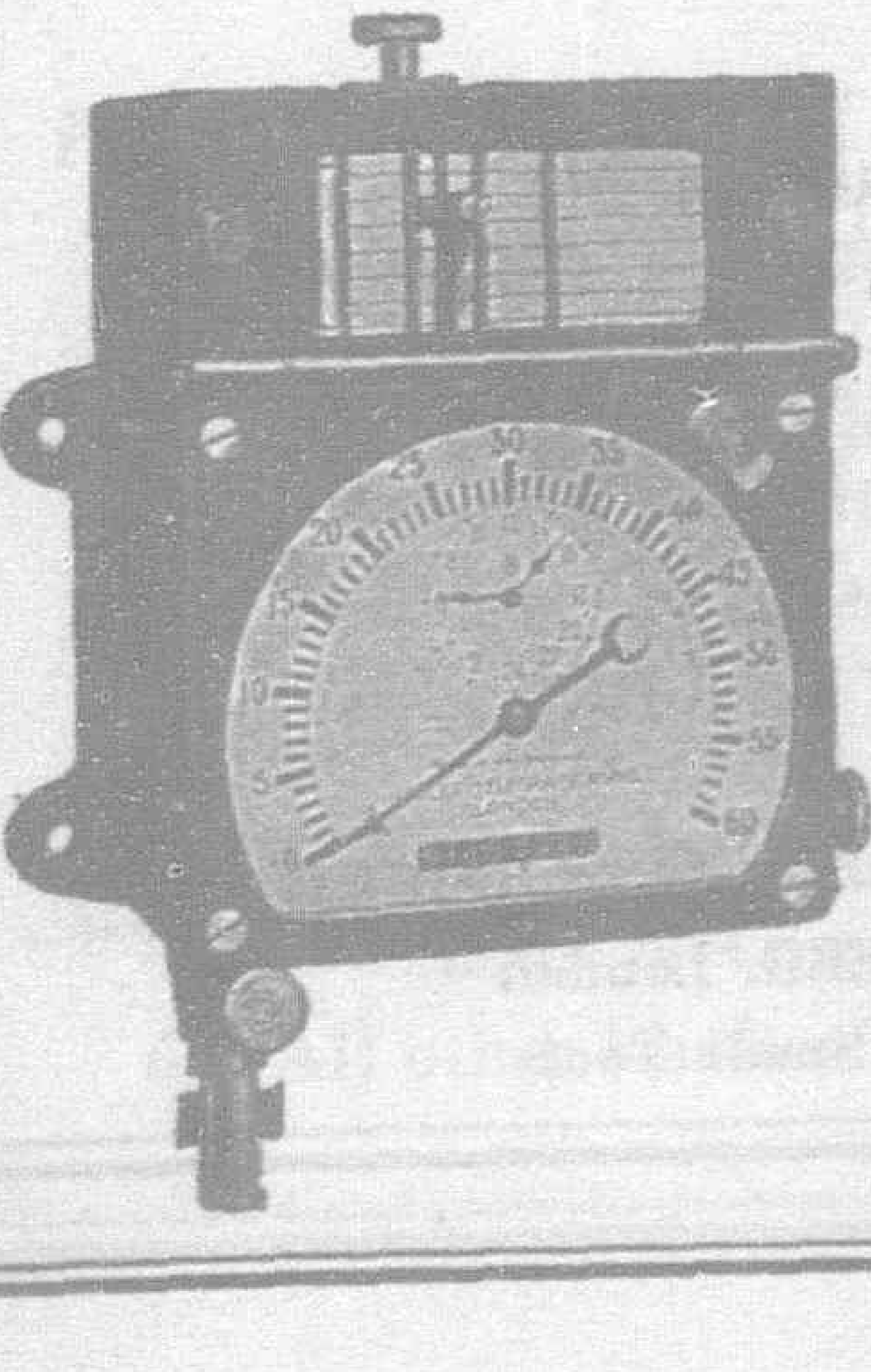
YOKOHAMA SEIKO KAISHA, JAPAN.

THE SUPERHEATER COMPANY
Designing Engineers and Manufacturers of
STEAM SUPERHEATERS
FOR
Locomotive, Marine and Stationary Service
Locomotive Feed Water Heater Equipment
Boiler Feed Pumps
Pipe Coils for Every Purpose

ELESCO

THE SUPERHEATER CO.
17 East 42nd Street New York, U.S.A.

THE BEST LOCOMOTIVE SPEED INDICATORS & RECORDERS
WITH CONJUGATE MOVEMENT



TELOC TYPE

Chart Feed on a Mileage Basis of 10 m/m per Mile.

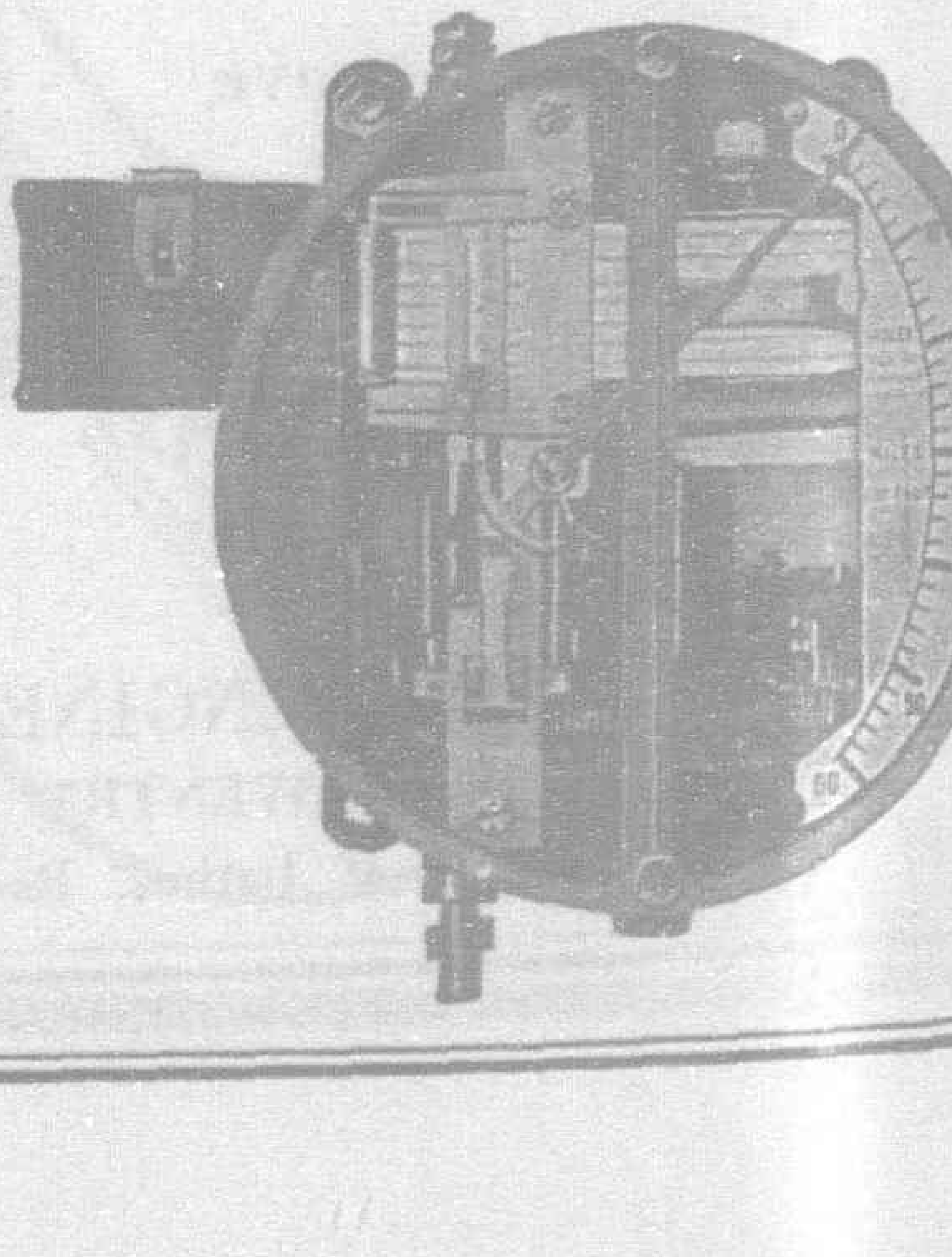
INDICATES:—Speed.
Total mileage since application of Instrument.
Total mileage of each run.
Time of Day in Hours and Minutes.
RECORDS:—Speed attained at any point of run.
Time the engine or coach is at work.
Distance covered.
Duration (up to 24 hours) and point of stops.
Time of Day in Hours and Minutes.
If desired apparatus to record working of Westinghouse or Vacuum Brakes.

HASLER TYPE

Chart Feed on a Time Basis of 4 m/m per Minute.

INDICATES:—Speed.
RECORDS:—Speed attained at any point of the run.
Time the engine or coach is at work.
Distance covered.
Duration and point of stops.
If desired bell can be fitted to ring at predetermined speed, or apparatus to record working of Westinghouse or Vacuum Brakes.

HASLER TELEGRAPH WORKS, 26 VICTORIA STREET
LONDON, S.W. 1.
Agents in China: WILLIAM FORBES & CO., PEKING.



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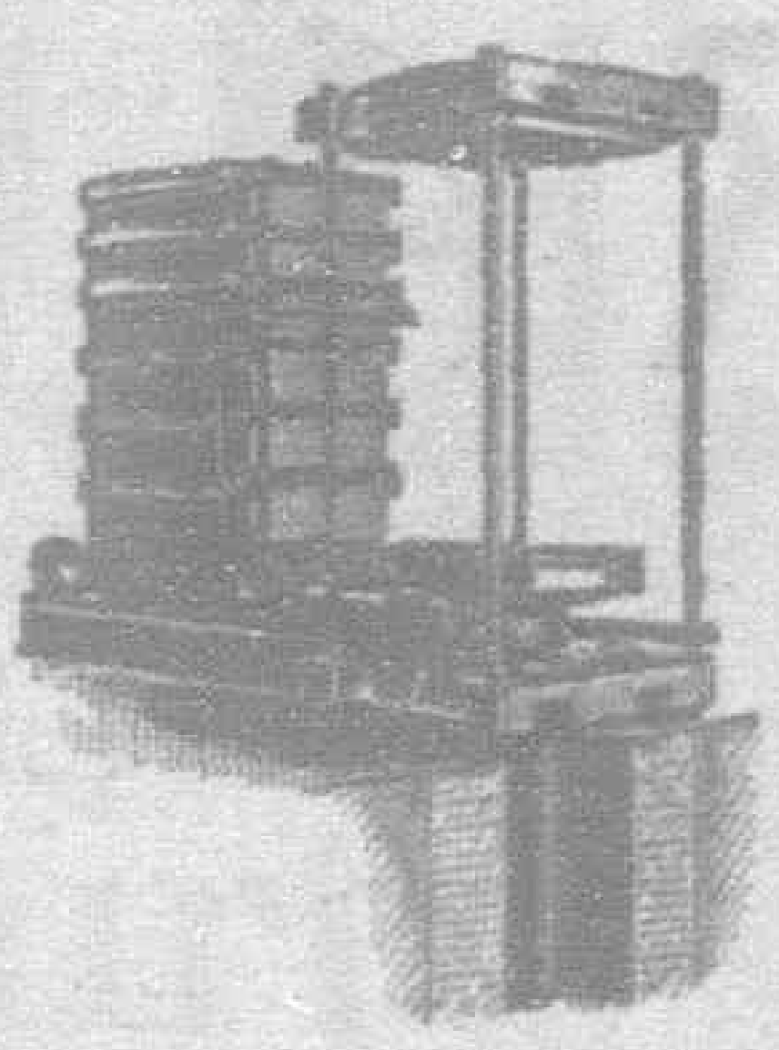
Hydraulic Presses



Hydraulic Packing Press, for Cotton Waste, etc.

for packing goods of every description, for Home and Foreign transport.

May we have your enquiries?

We make Presses and Pumps for Hand, Steam, and Electric Power.

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Wakefield Road,
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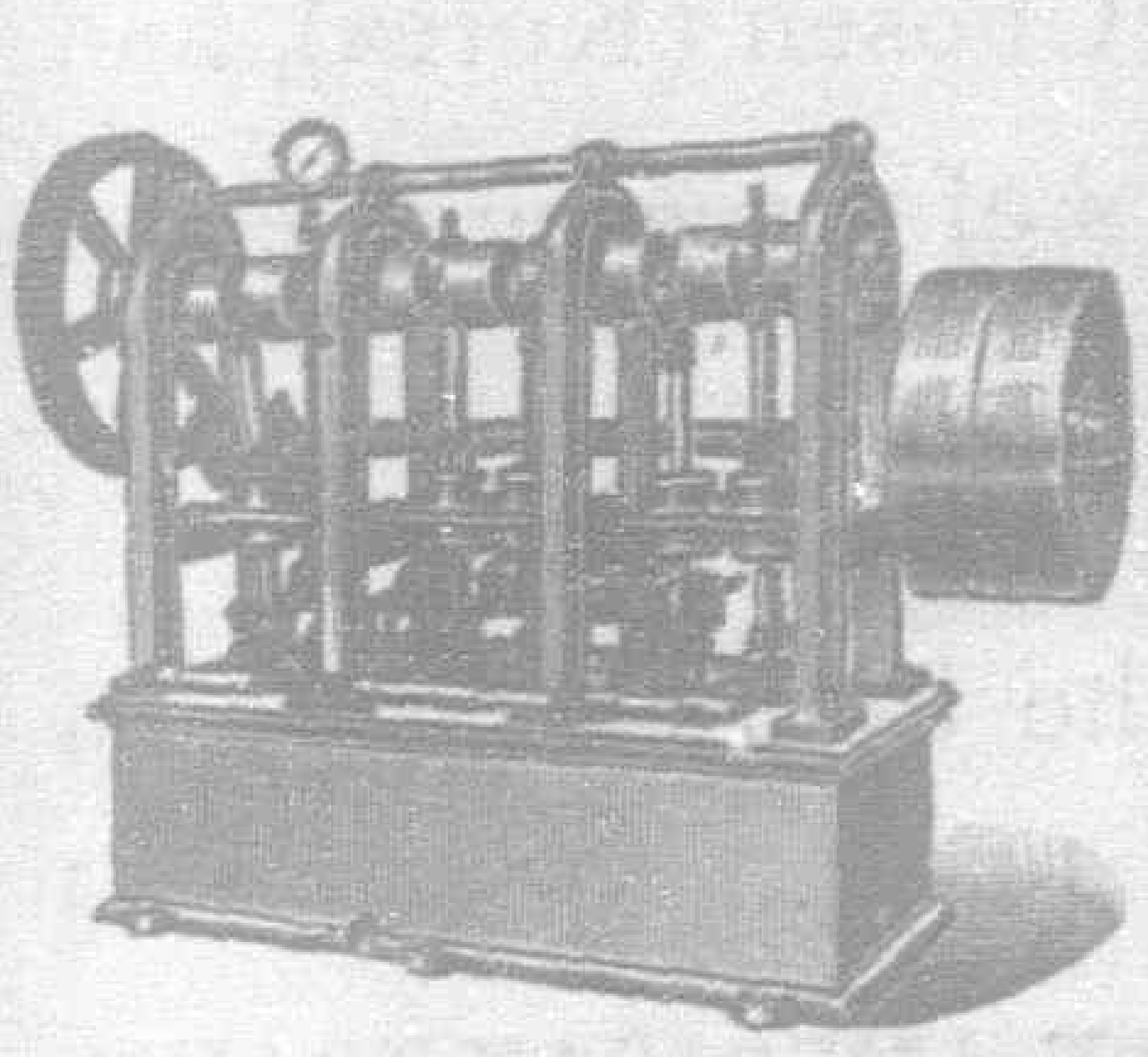

6 Throw Belt Driver Pump

Hydraulic Leathers, Pipes and Fittings always in stock.

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Prompt shipment of complete sets and accessories of every description

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Oxygen Supplies of every description

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Cables: "SIEBE, LONDON."

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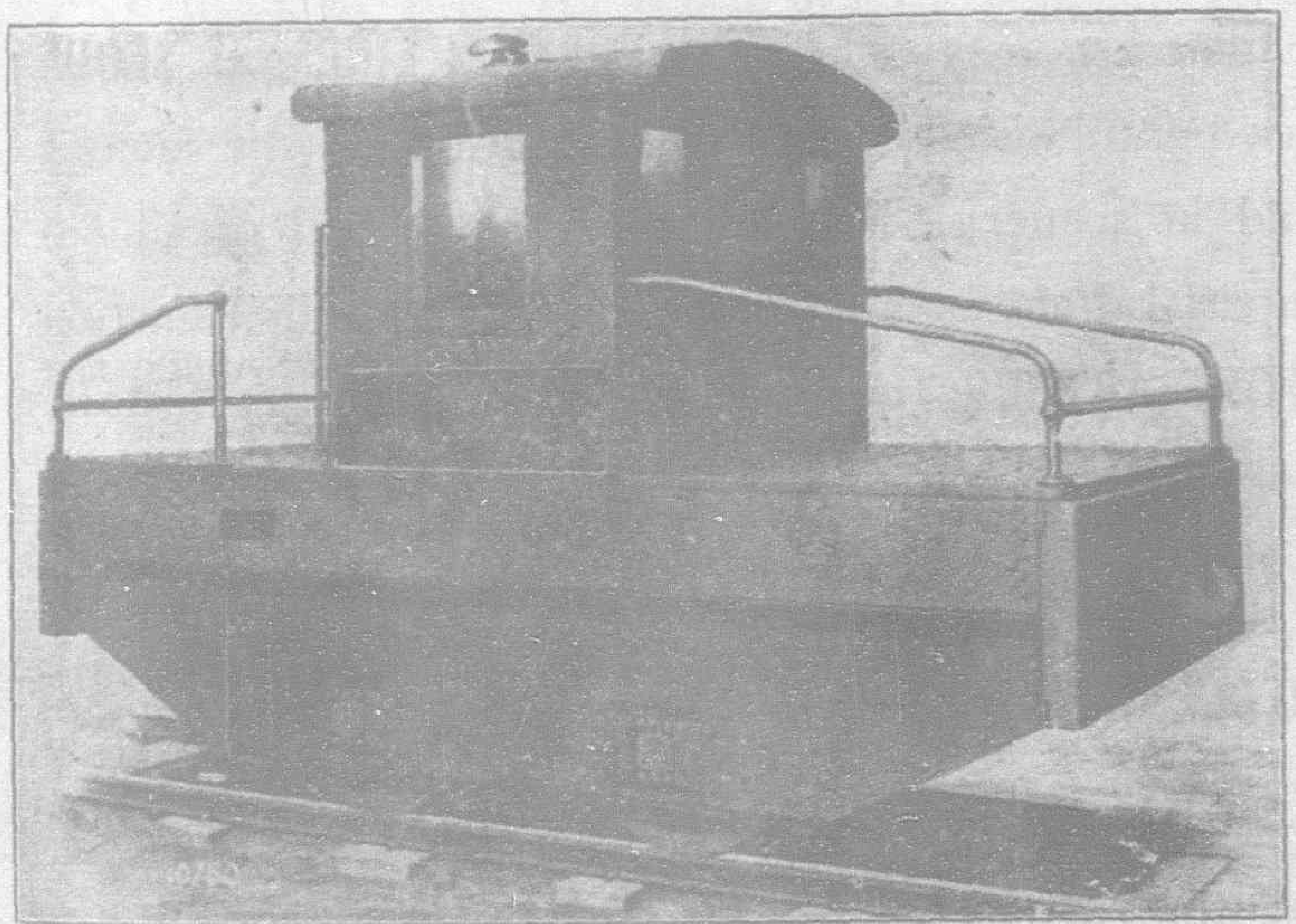

Electric Industrial Locomotive with central cab, used at dock.

JEFFREY

ELECTRIC INDUSTRIAL

LOCOMOTIVES

Reduce the cost of Handling Materials and Shunting Cars in and around Docks, Shipyards, Factories, Mines and Mills.

Write for further particulars

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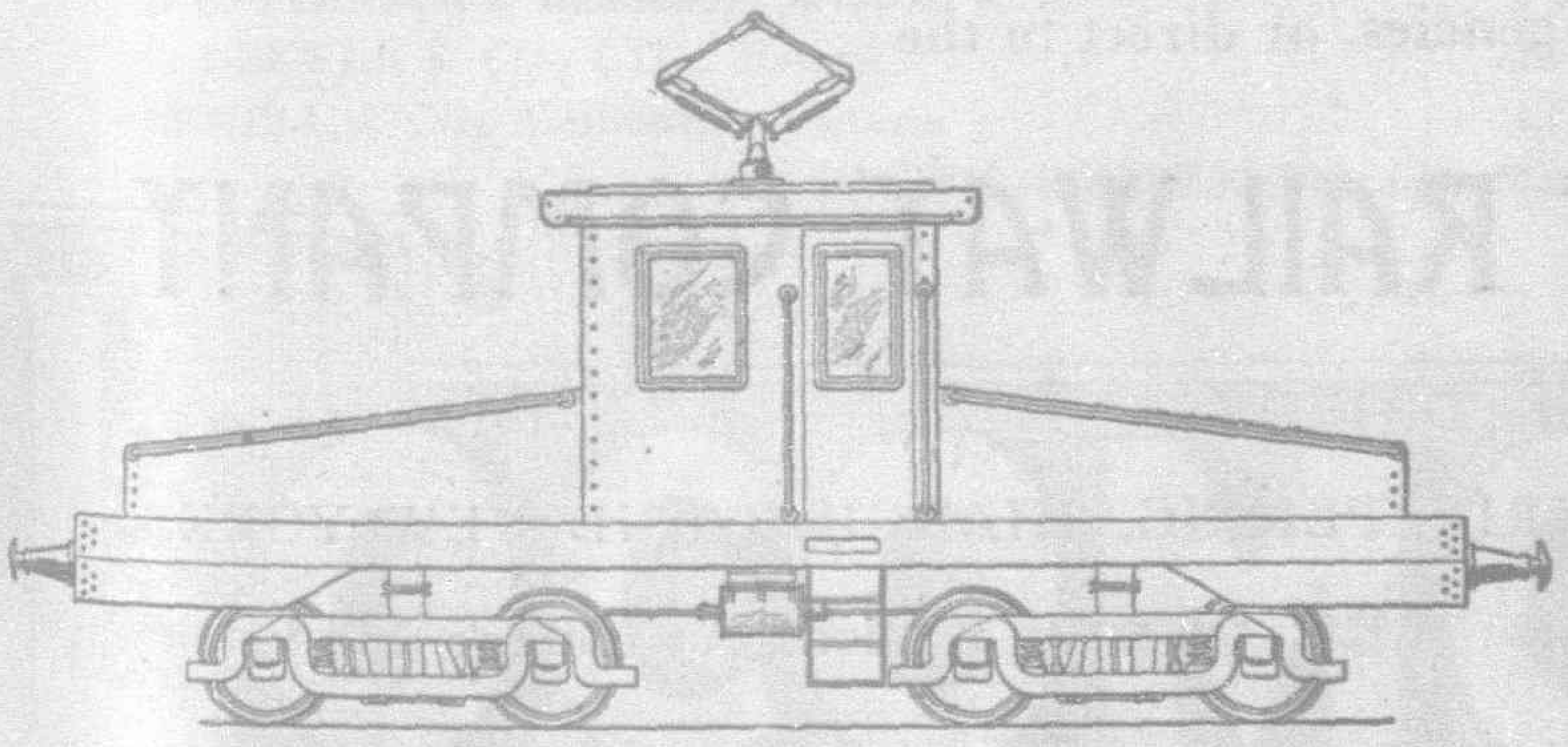


Combination Trolley and Accumulator Locomotive.

Accumulator Locomotive handling materials in a large Industrial Plant.

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

THE CHOSEN AND MANCHURIA LINES are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul and Dairen and Changchun), but the **ORDINARY TRAINS ARE EQUAL TO MOST AMERICAN TRAINS,** run at least twice a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

HOTELS under the Company's management are established **ON FOREIGN LINES** at **SEOUL** (capital of Chosen), **FUSAN** and **SHINGISHU** (the two extremities of Chosen), **KONGOSAN** (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), **MUKDEN** (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), **CHANGCHUN** (junction for three railways and "key to Manchuria"), **PORT ARTHUR** (of world-wide fame for its historic sieges and ruined forts), **DAIREN** (one of the greatest commercial cities in the Orient), and **HOSHIGAURA** (the finest seaside resort in North China).

FROM DAIREN there are **FREQUENT AND REGULAR STEAMERS** to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

SOUTH MANCHURIA RAILWAY COMPANY

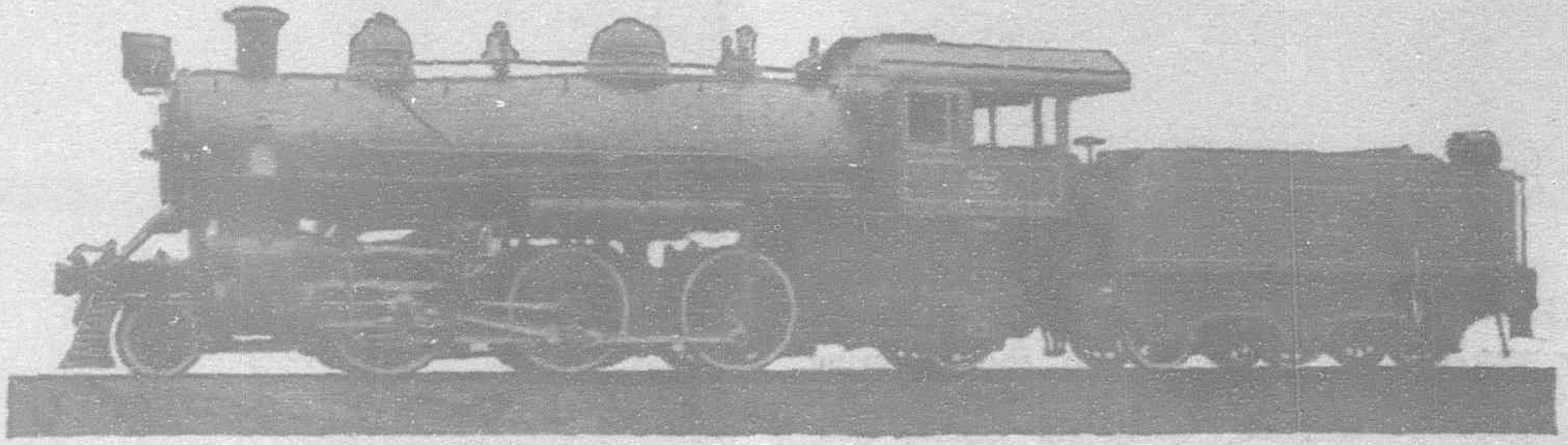
Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, SHANGHAI AND NEW YORK.

Telegraphic Address: MANTETSU or SMRCO. Codes: A.B.C. 5th & 6th Editions, A1 Lieber's, and Bentley's

BALDWIN

Thirty Locomotives Built For China In Record Time



BUILT FOR THE PEKING-HANKOW RAILWAY, CHINA

Gauge, 4'8½". Cylinders, 20" by 26". Working pressure, 170 pounds. Driving Wheels, diameter, 59". Total weight, 155,000 pounds. Total weight, engine and tender, 247,500 pounds. Tractive force at 85% of working pressure, 25,500 pounds. Fuel, coal. Service, Passenger and Freight.

ON March 30, 1921, the Peking-Hankow Railway ordered thirty Prairie (2-6-2) type locomotives, similar to ten built and delivered by these Works in 1919.

The contract called for quick deliveries. Fifteen were to be finished in five and one-half months and the remaining fifteen one month later.

With our very complete facilities for purchasing the raw materials and fabricating all the parts, we were able to ship the 30 locomotives from our own docks on June 11. They were delivered at Hankow, September 4—JUST 5 MONTHS AND 5 DAYS AFTER RECEIPT OF ORDER.

Baldwin Service is World-wide, and is at the command of all the railways

THE BALDWIN LOCOMOTIVE WORKS

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PACIFIC COMMERCIAL CO., Manila, P. I., and New York

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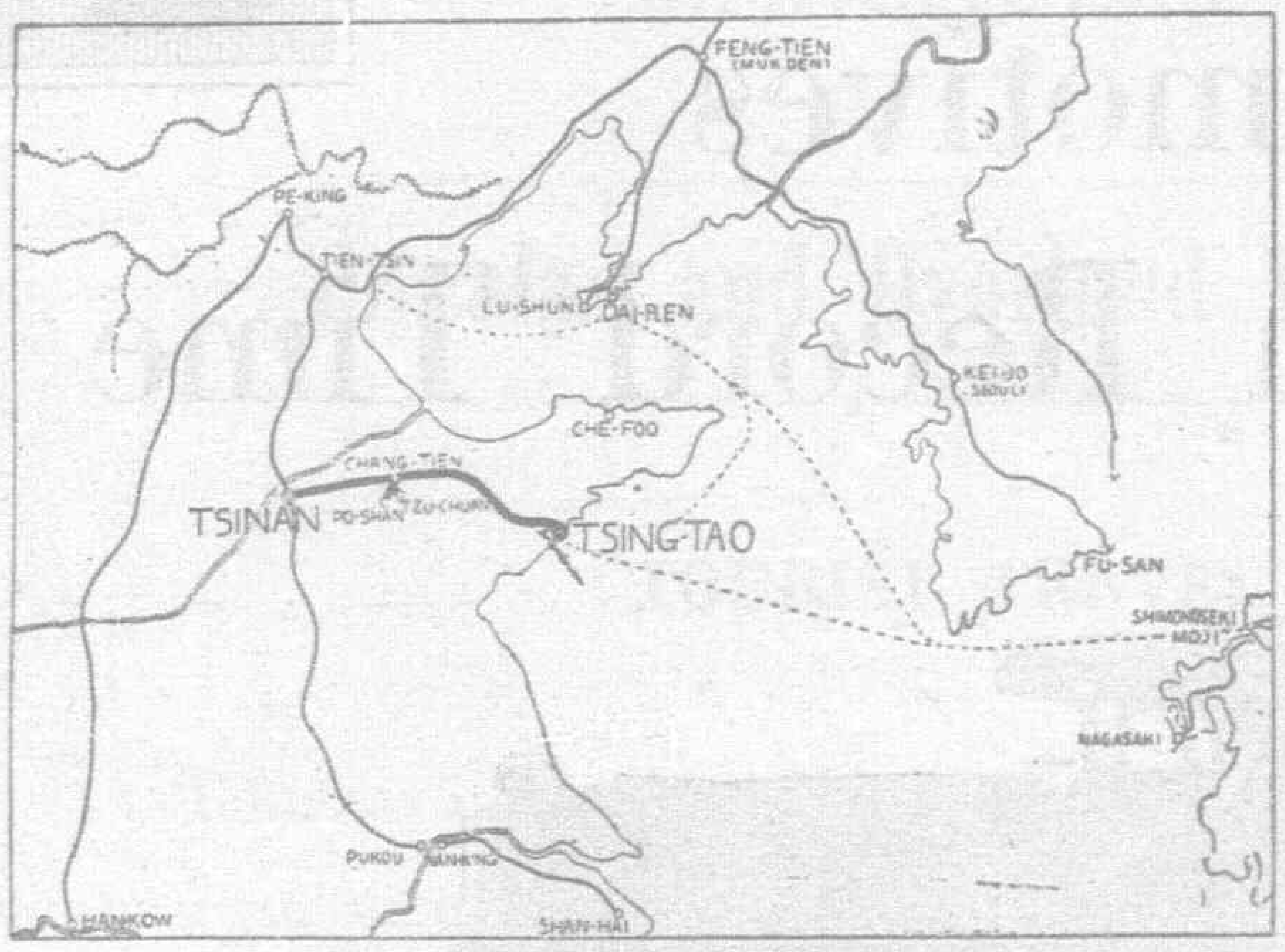
LOCOMOTIVES

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Choustun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.

For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.

Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway.

At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.

The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 9.30 p.m. arrives Tsinan 8.30 a.m.
Train No. 2 leaves Tsinan daily 8.00 a.m. arrives Tsingtao 6.30 p.m.
Train No. 4 leaves Tsinan daily 11.00 p.m. arrives Tsingtao 9.30 a.m.

Local Trains run between Tsingtao and Kaomi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

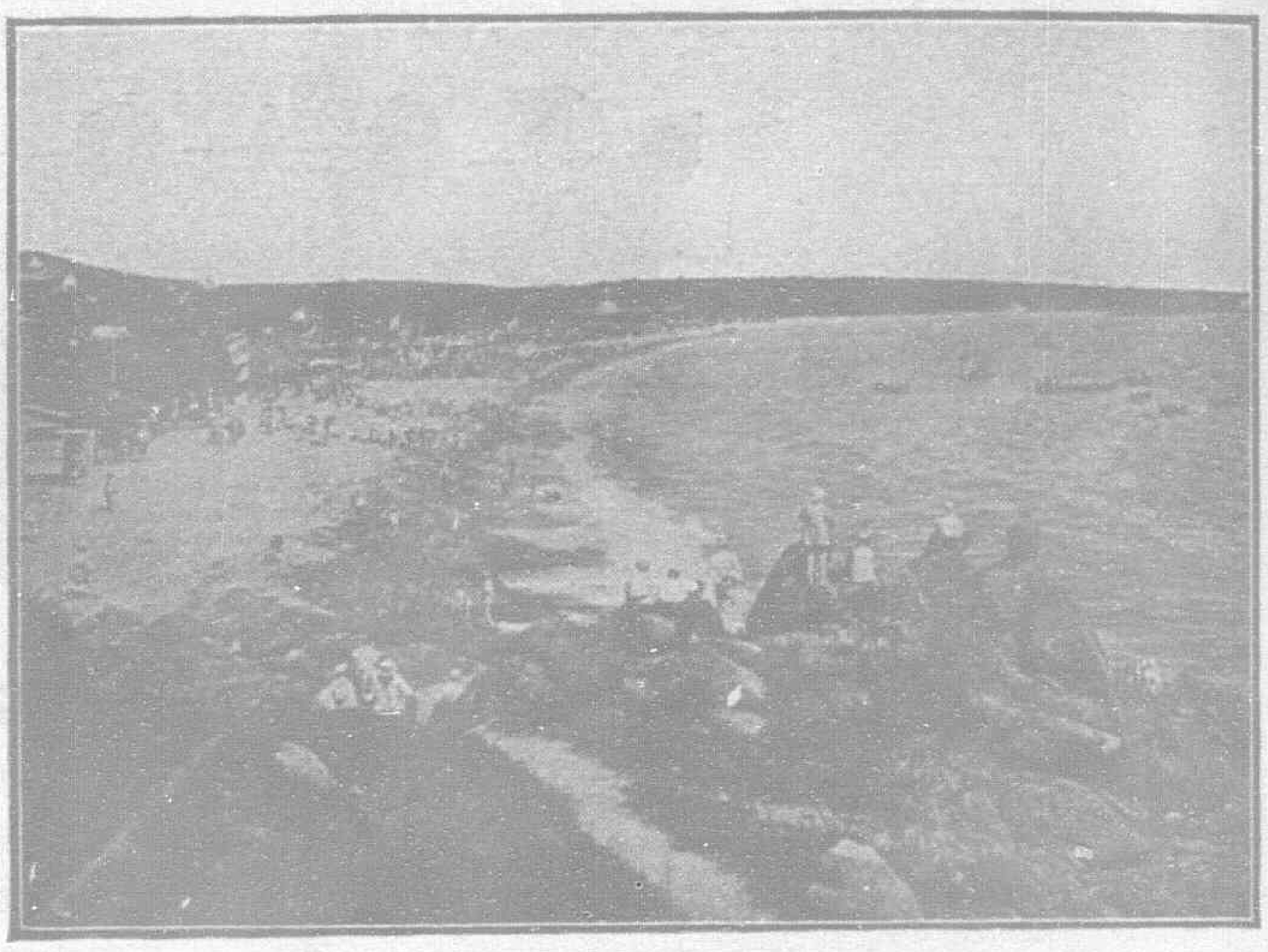
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.44 a.m. & 10.21 p.m. daily.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them,

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.

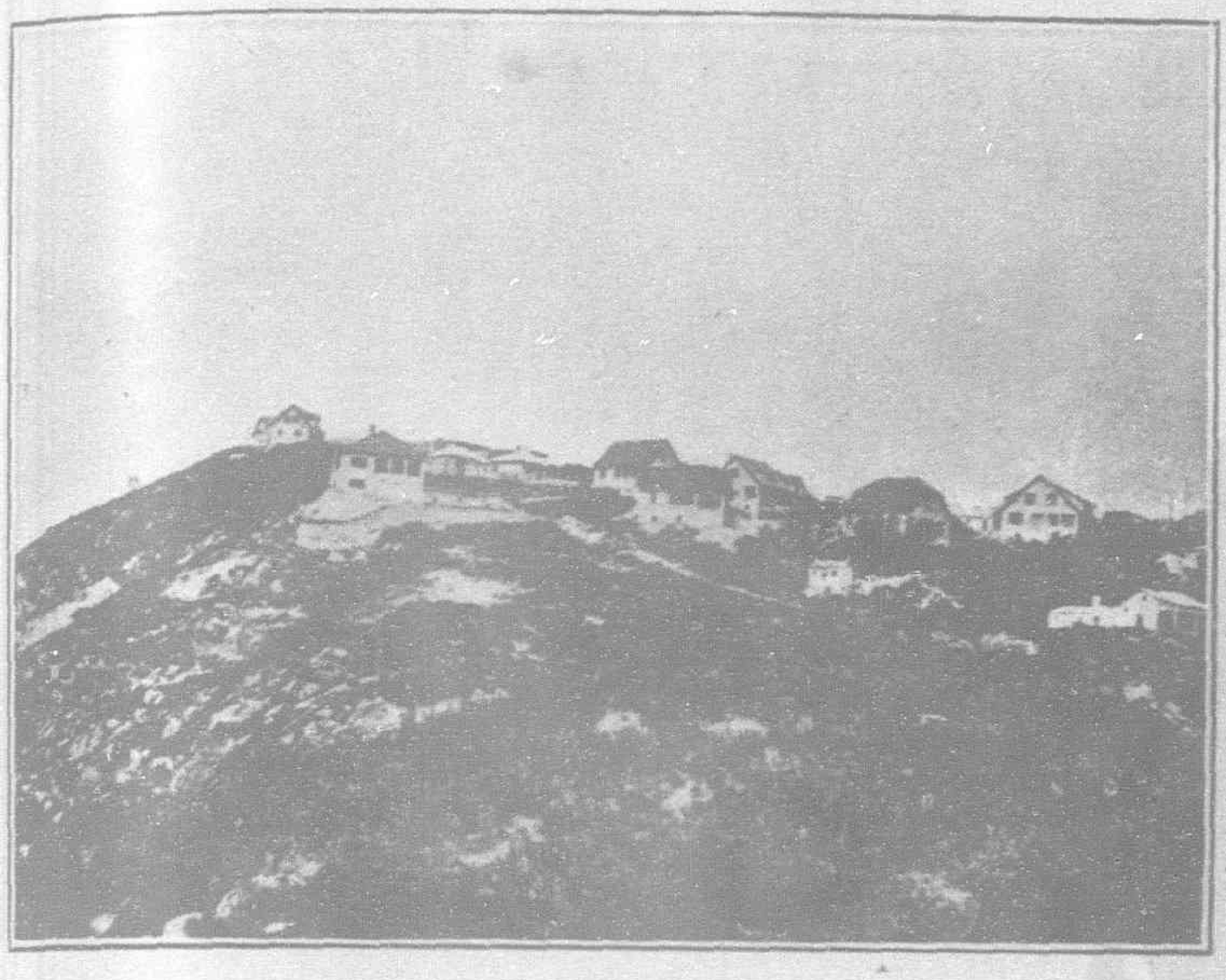
TSINGTAU STATION

For Further Information, please apply to

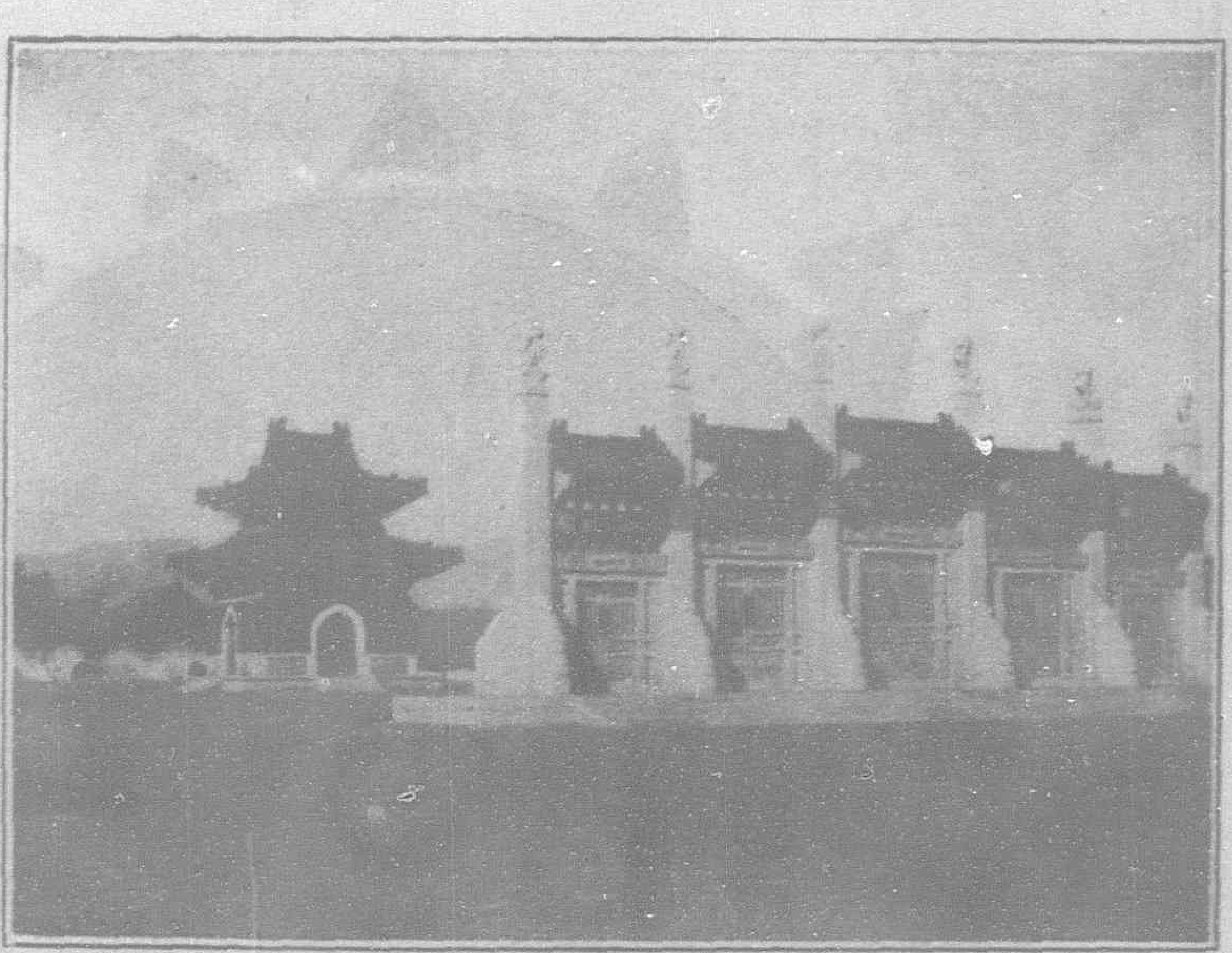
THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

CABLE ADDRESS: "SANTETSU" CODES: A.B.C. 5TH ED. & AI.

CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



AT THE CHUNG LING TOMBS

PEKING-HANKOW LINE

"The Road Through The Heart of China"

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

In the future, this line will connect by means of a ferry-boat the Hankow-Canton Railway whose completion will bring the Capital of China, and Hankow, the Great Central Market, within easy distance of Canton the southeastern metropolie.

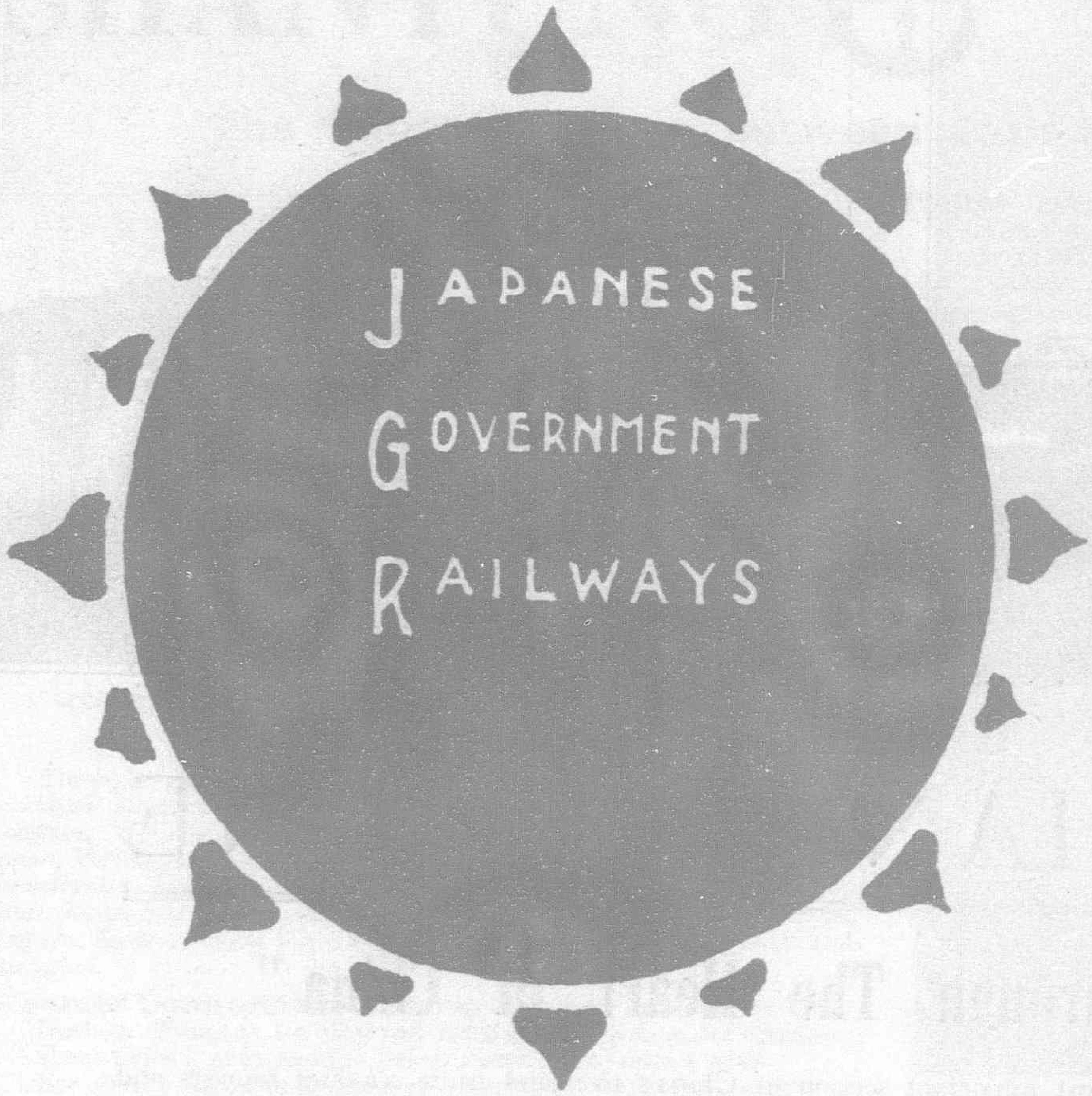
From the Capital to Hankow the journey about 30 hours by the bi-weekly "Express" through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Reservations, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

Telegraphic Address: "KINCO" **Codes: A.B.C. 5th Edition** **Telephone East 1698**



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THOROUGHLY EQUIPPED LINES REACH EVERY PLEASURE RESORT AND BUSINESS POINT

Reserved Cars, Private Cars, Special Trains on Previous Arrangement for Tourists' Parties of all Sizes

WELL-FURNISHED PASSENGER CARS WITH SLEEPING AND DINING ACCOMMODATION ON THROUGH TRAINS AND EXPRESSES

TWO MOST RELIABLE ORGANIZATIONS FOR TRAVELLERS

1. **JAPAN TOURIST BUREAU**
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   Head Office: Tokyo Station, Tokyo, Japan
2. **JAPAN HOTEL ASSOCIATION**
   c/o Traffic Bureau, Japanese Government Railways

For Particulars, Time-Tables, Guide Books, etc., please apply to
TRAFFIC BUREAU, DEPARTMENT OF RAILWAYS, TOKYO, JAPAN

JAPANESE
GOVERNMENT
RAILWAYS

THROUGH BOOKING TO AND FROM

CHINA

Single and Return Tickets between China and Japan via Chosen

Period of Validity: Single, 40 days: Return, 110 days. 20% Reduction for Return Tickets

China-Japan Party Trip Tickets

Period of Validity: Two months. Reduction: 25%-50% for 10 or more passengers

China-Japan Circular Tour Tickets

Period of Validity: Four months. Reduction: 30% for Railway; 25% for Steamer

China-Japan Parcel Through Traffic

Parcel through conveyance between the principal stations in China and Japan viâ Chosen at low rates

OFFICIAL GUIDE TO
EASTERN ASIA

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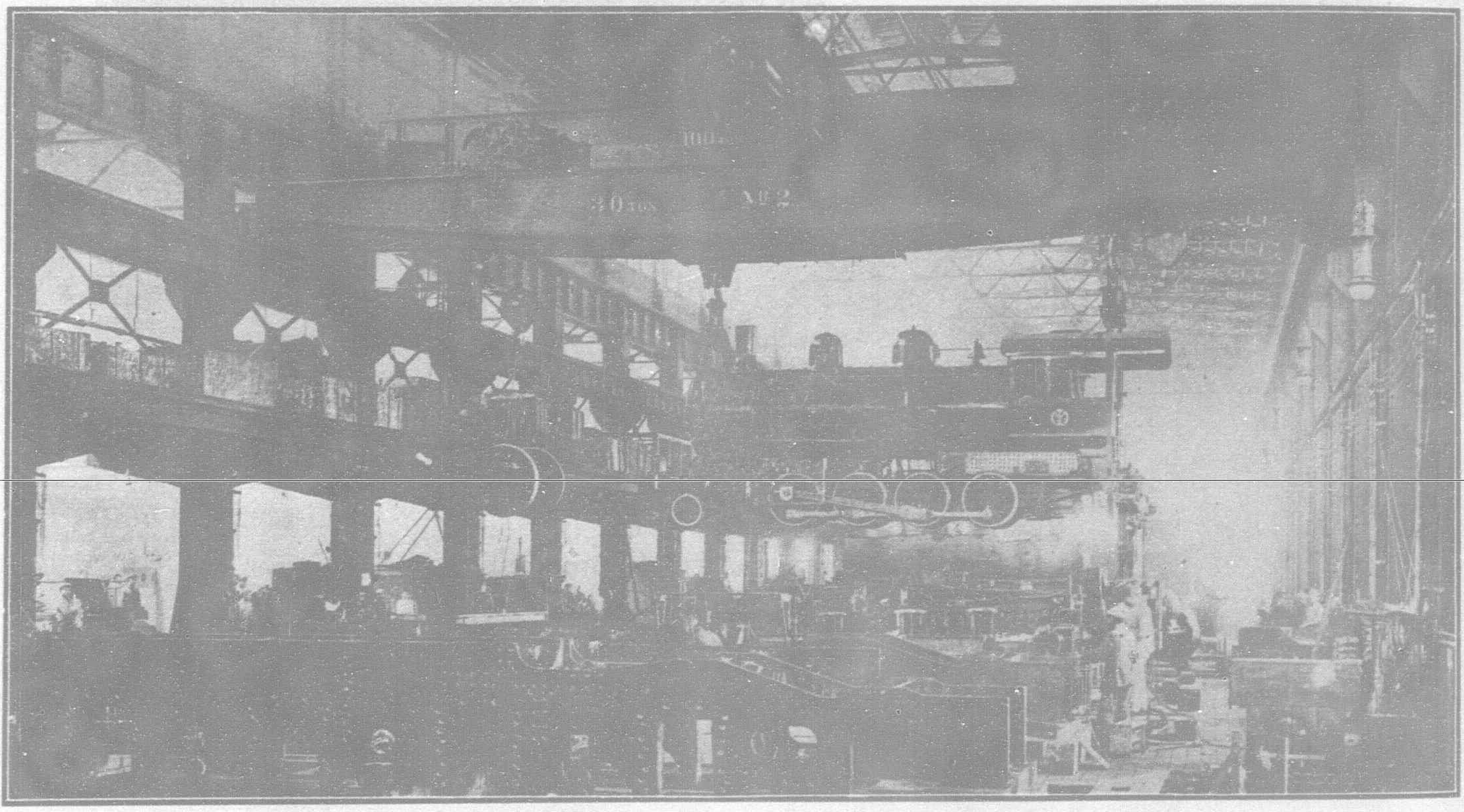
2nd	„ S.W. Japan	Y. 5.00	„ Maruzen (Tokyo)
3rd	„ N.E. Japan	Y. 5.00	„ Offices of Japan Tourist Bureau (Tokyo, Kobe, Peking, etc., etc.)
4th	„ China (Proper)	Y. 7.00	
5th	„ East Indies	Y. 5.00	„ G. P. Putnam's Sons Co. (New York)
			„ The Philippine Educational Co. (Manila)

SOUTH MANCHURIA RAILWAY

RAILWAY

SHAKAKO WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

LARGEST AND MOST COMPLETE IN ALL MANCHURIA AND CHINA

AREA OF LAND: About 300,000 Tsubo. OFFICES & WORKSHOPS, 14,000 Tsubo

CAPACITY OF EXECUTING REPAIRS SIMULTANEOUSLY:

27 Locomotives, 36 Passenger Cars, and 130 Freight Cars, besides Constructing and Repairing other Railway Materials, Mining Machinery, etc. Employees: 5,000 Japanese and Chinese.

THE EAST IS EAST AND THE WEST IS WEST

SOUTH MANCHURIA RAILWAY

COAL IRON

Togo Pit of the S.M.R. Fushun Collieries

Anshan Steel Works of the S.M.R.

FUSHUN COAL

The Best Steaming Coal in the Far East | Fresh Stocks Always on Hand

Depots:

Dairen
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Port Arthur
Tientsin
Newchwang
Tsingtao

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Chefoo
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Singapore
Penang
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Batavia
Yokohama
South Seas
Niigata
Osaka
Nagoya
Shanghai
Moji
Saigon
etc.

Also Sulphate of Ammonia, Fire Clay, and Talc

Pamphlets and Particulars gratis from any of the above Depôts and Agencies, and from the

MINING DEPARTMENT,
South Manchuria Railway Company, Dairen

ANZAN IRON & STEEL WORKS

New Enterprise Set Up Like Magic Amidst the Wilderness of Manchuria.

TRACT OF LAND: about 4,000,000 tsubo.

BLAST FURNACE No. 1 (with a capacity for about 350 tons per day) Opened to service on April 29, 1919.

BLAST FURNACE No. 2 (with a capacity for about 350 tons per day) Made ready for service on February 24, 1920.

MEANS OF TRANSPORTATION in the plant: 24 miles of railway and 2.5 miles of electric tramway in operation, with three light locomotives and a number of slag-, coke, and ore-cars of from 8 to 24 tons.

A NEW TOWN SITE of 400,000 tsubo, with the necessary roads and water and sewage services, laid out and rented to lessees.

OFFICIALS AND EMPLOYEES: 2,300 Japanese and Chinese.

BUT THE TWAIN HAS MET AND BLENDED HERE

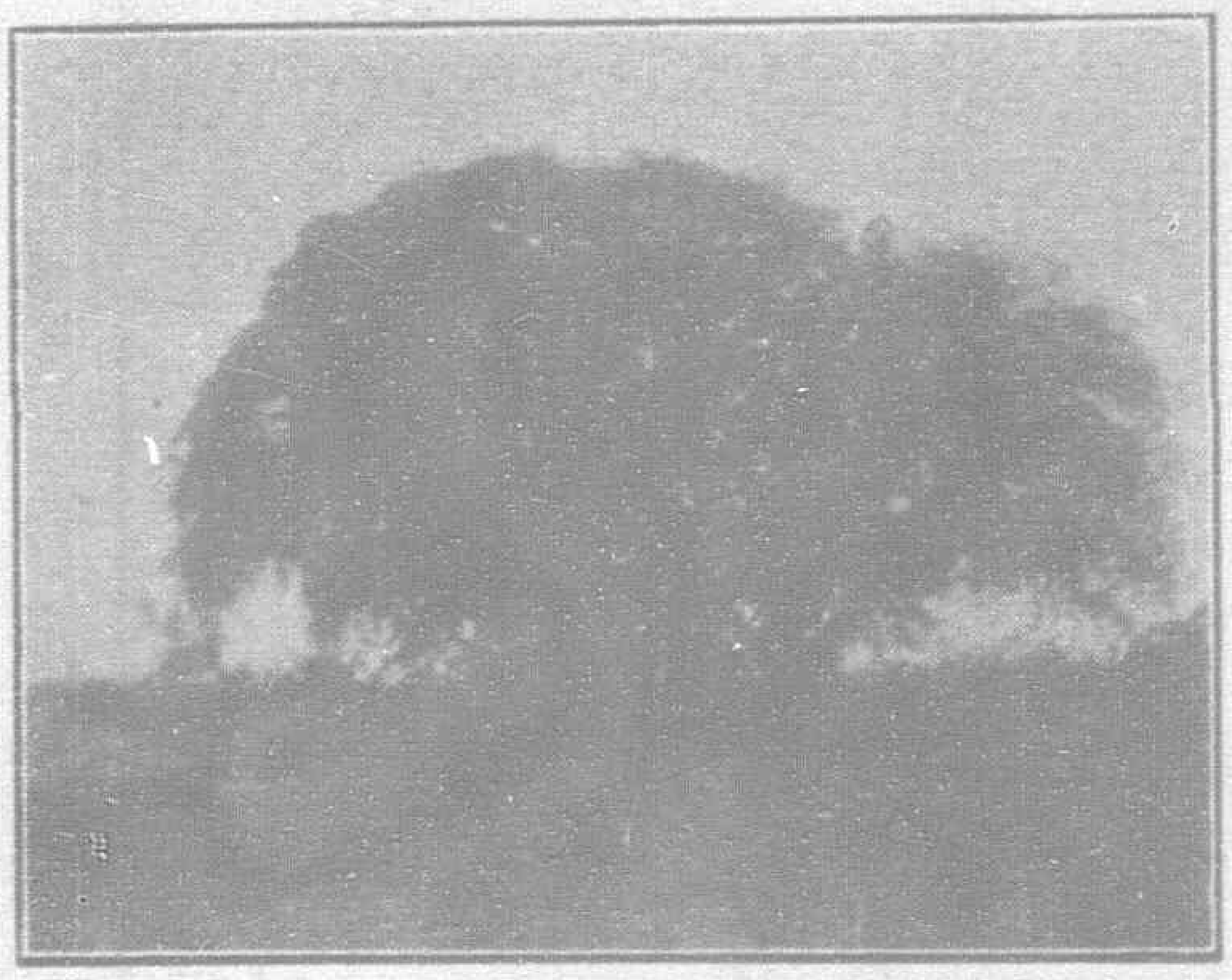
JAVA—THE WONDERLAND

HAVE YOU NOT YET VISITED JAVA?

IF NOT, DO SO NOW!

Bridge Bi Cis, Soerabaia Goods-shed, Java State Railways, Soerabaia City.

Girl Carrying Capoc.



Waringin.

Java, the peerless gem in that "magnificent Empire of Insulinde, which winds about the equator like a garland of emeralds," is the ideal tropical island, the greenest, the most beautiful and the most exquisitely cultivated spot in the East, the most picturesque and satisfactory bit of the tropics anywhere near the world's great routes of travel.

It fulfils the conception of what a paradise ought to be. It satisfies the imagination and more—for no Northern imagination ever conceived of skies so soft or indolent as these, of seas so serene and beautiful, of landscapes so exquisite or of nature so bountiful.

There is something here for every taste. The sportsman will find excellent big game shooting—the architect and the archeologist will delight in exploring the ruins of Buddhistic and Hinduistic temples. Those studying social and political problems resulting from colonial possessions can study here one of the most successful colonial systems existing. The geologist will grow enthusiastic over the many volcanoes active or quiescent, found here. At Buitenzorg, one hour's run from Batavia, the botanist has at his disposition the largest and best equipped Botanical gardens of the universe. The agriculturist will delight in the many cultures as f.i. rice, tea, coffee, rubber, etc., found here. Moreover, travelers are entirely safe in Java and even ladies alone can tour the island without inconvenience.

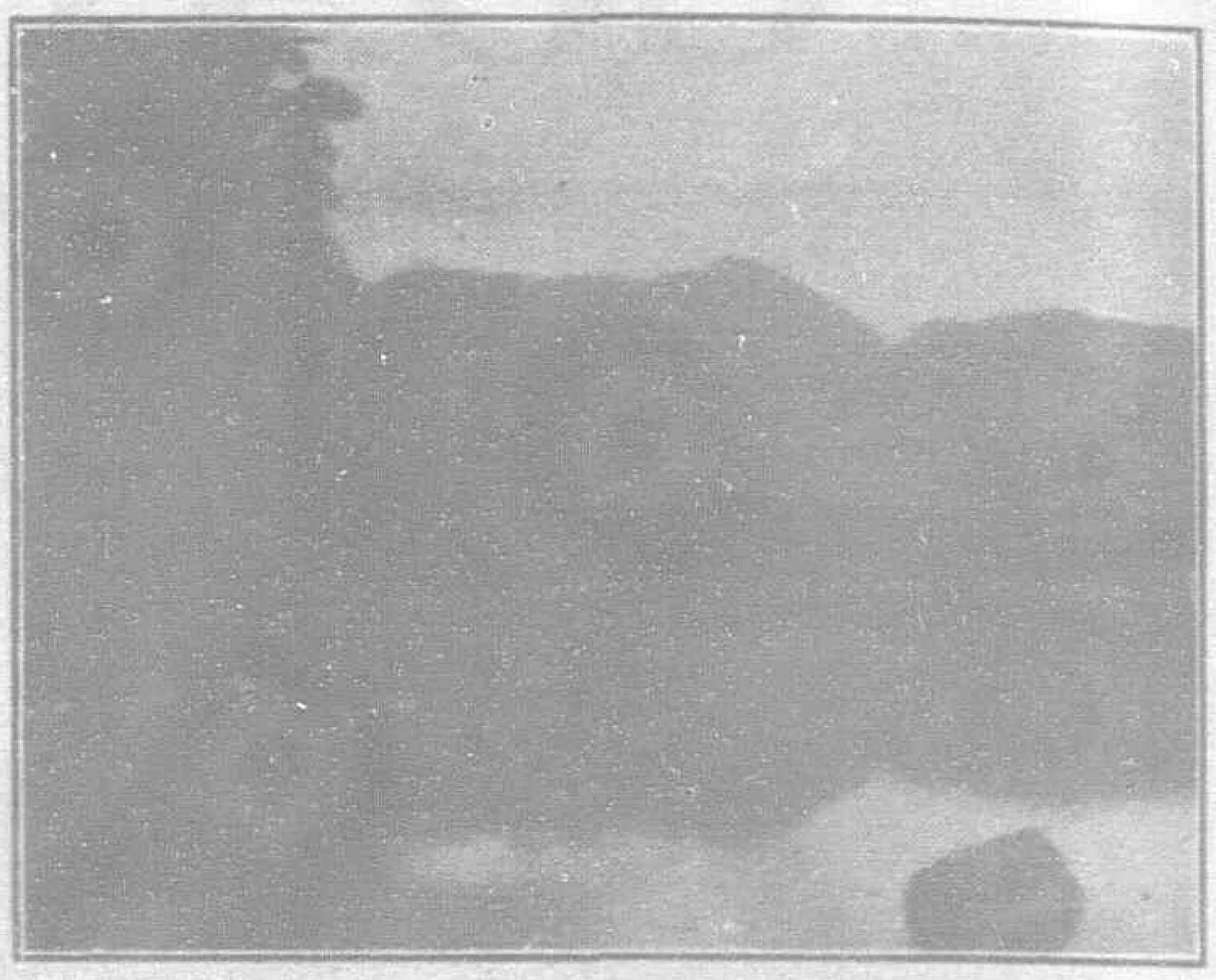
And to close this incomplete list of Java's advantages, it is singularly accommodating as regards climate. Thanks to the mountainous character of its physical conformation, and the different altitudes of its towns and hill stations, the visitor can select the climate best suited for his constitution. In a few hours he may change from the tropics to the temperate zone, may migrate from Batavia to Sindanglaja, 3,483 feet above the sea-level, or from Soerabaia to Tosari, at an altitude of 5,776 feet, and famous for its bracing air.

Few tourist playgrounds, in fact, are so favored, or possess a greater variety of attractive features.

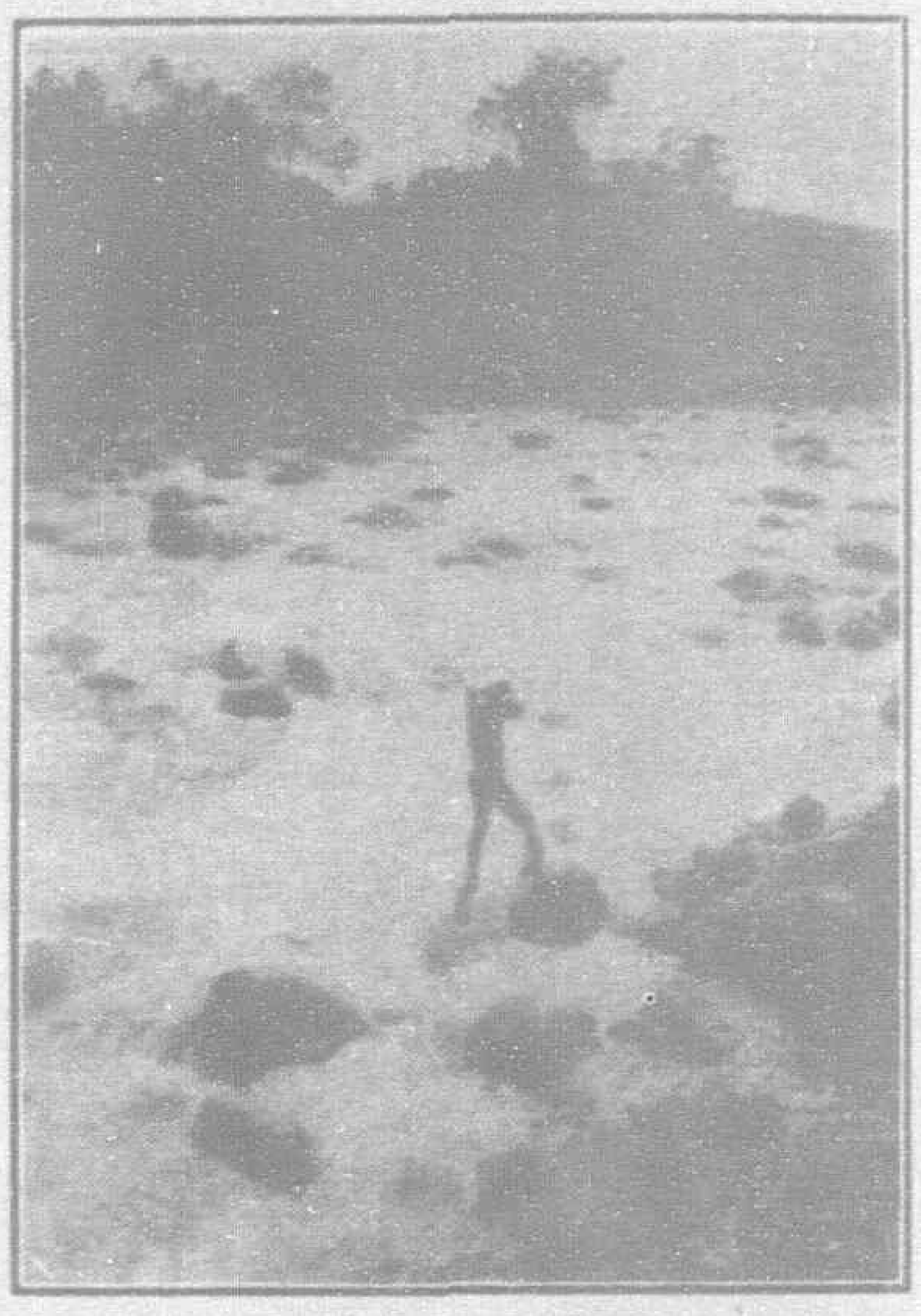
THE JAVA GOVERNMENT RAILWAYS own 2,629 miles of thoroughly equipped lines, passing through all the principal Tourist centres.

Comfortable travelling—frequent express and fast trains. Restaurant cars with efficient service in all express and fast trains.

For full information and literature apply to the "Official Tourist Bureau" at Weltevreden, Rijswijk 18.



Pond in the Neighborhood of Garoet.



River Brantas, Malang.

Caves, South Coast, Java.

THE JAVA GOVERNMENT RAILWAYS

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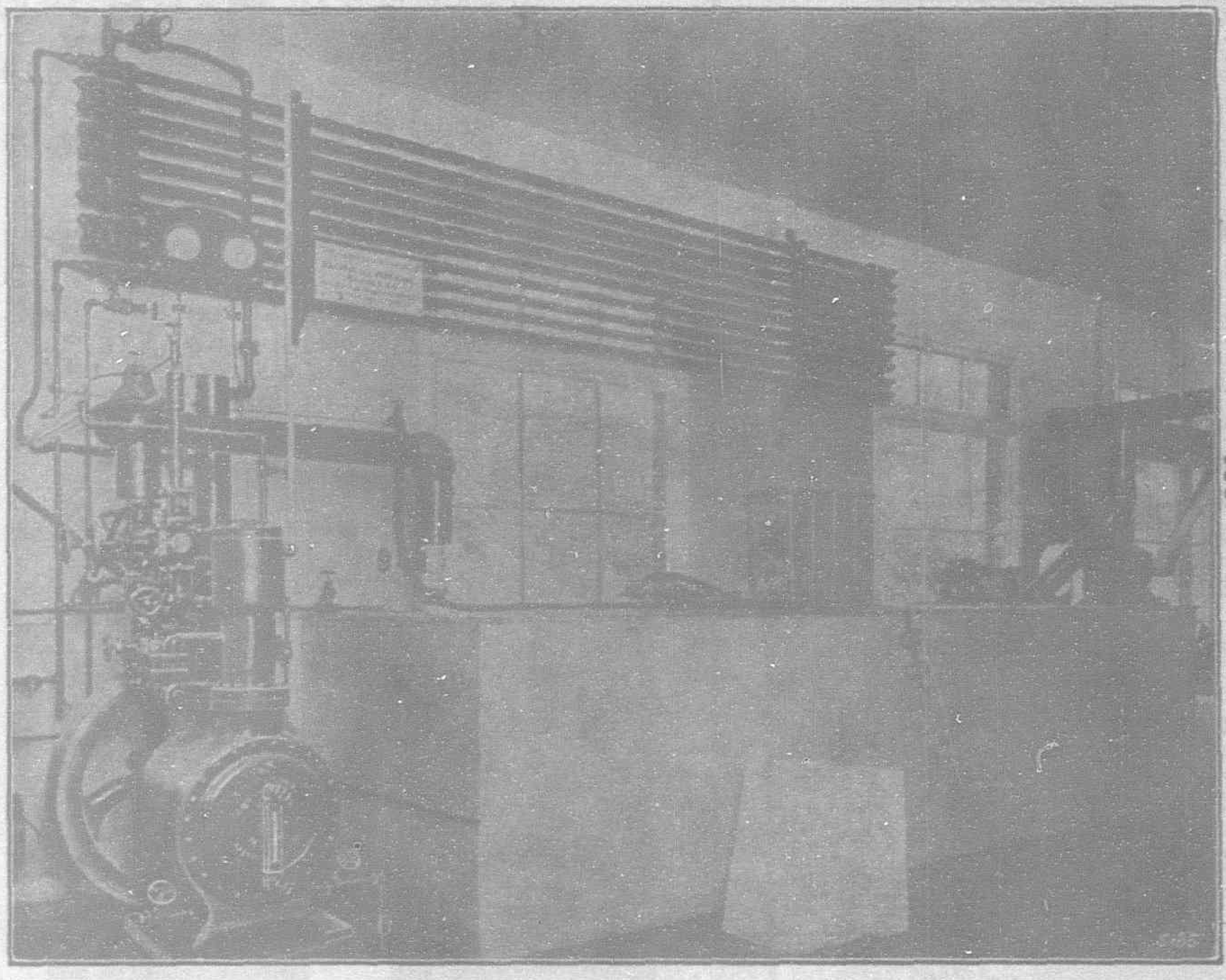

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Here is the illustration of a typical standard Brunswick ice plant. It shows a plant which will produce two tons of ice daily. We also manufacture standard plants varying in capacity from two hundred fifty pounds to six tons. These plants are furnished for either steam or belt drive and are especially adapted to small towns, haciendas, plantations, large camps, cantonments, hospitals, etc.

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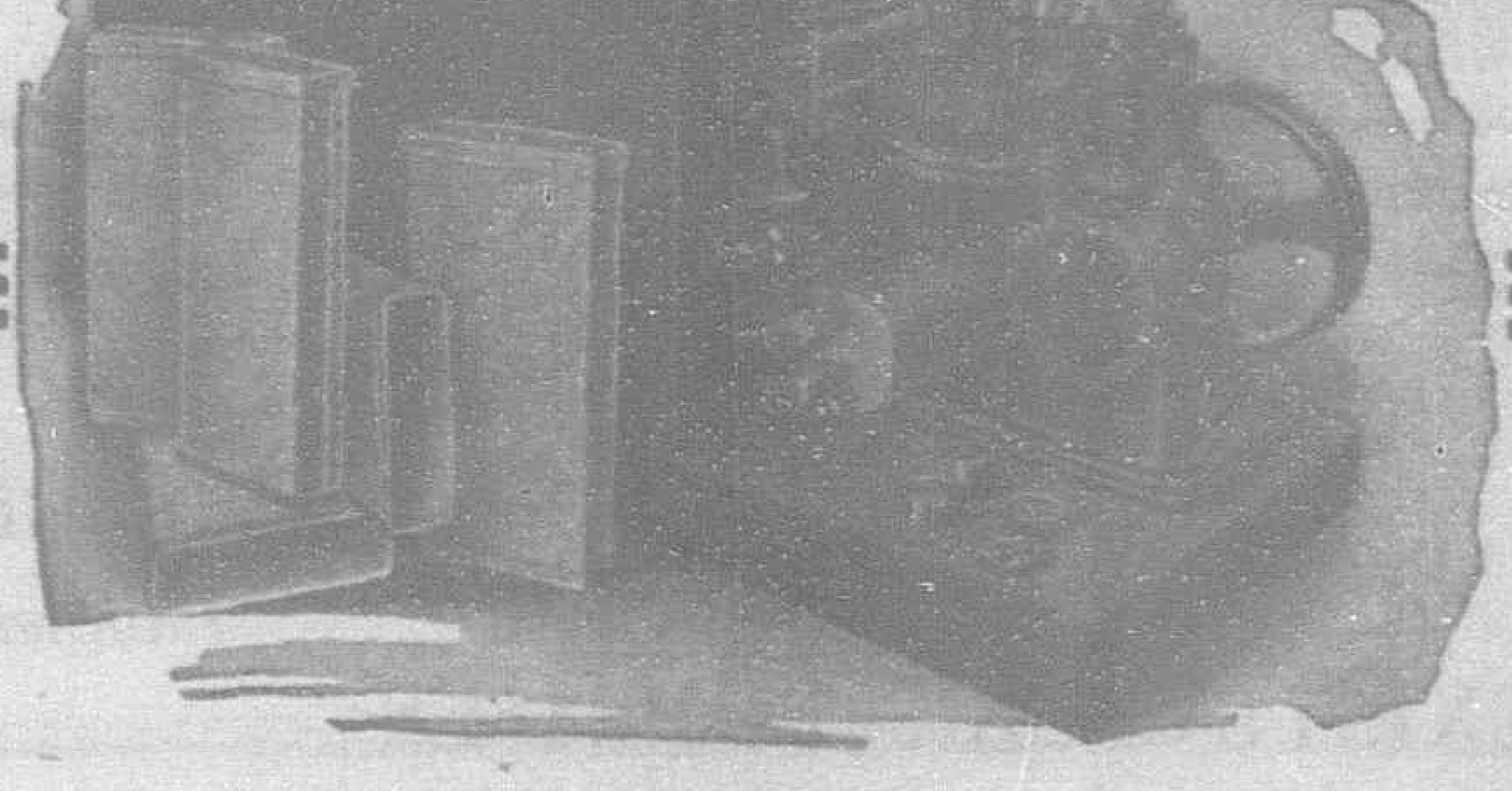

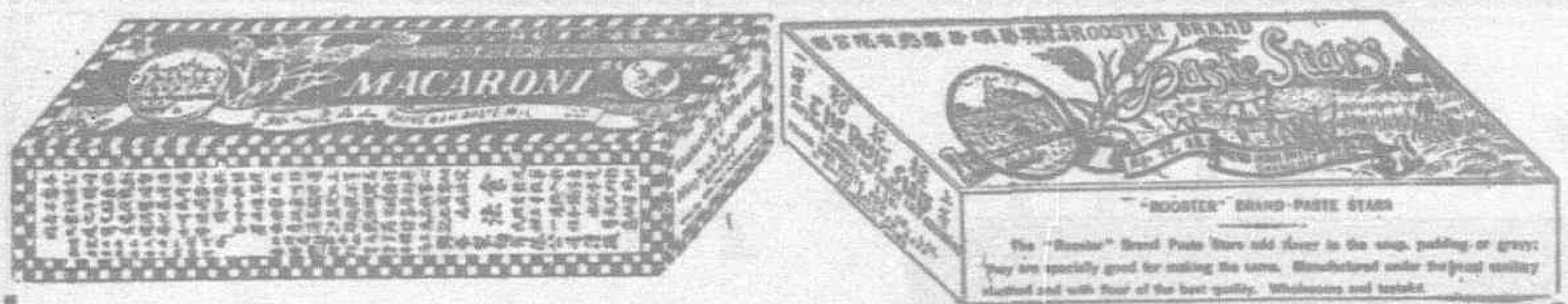

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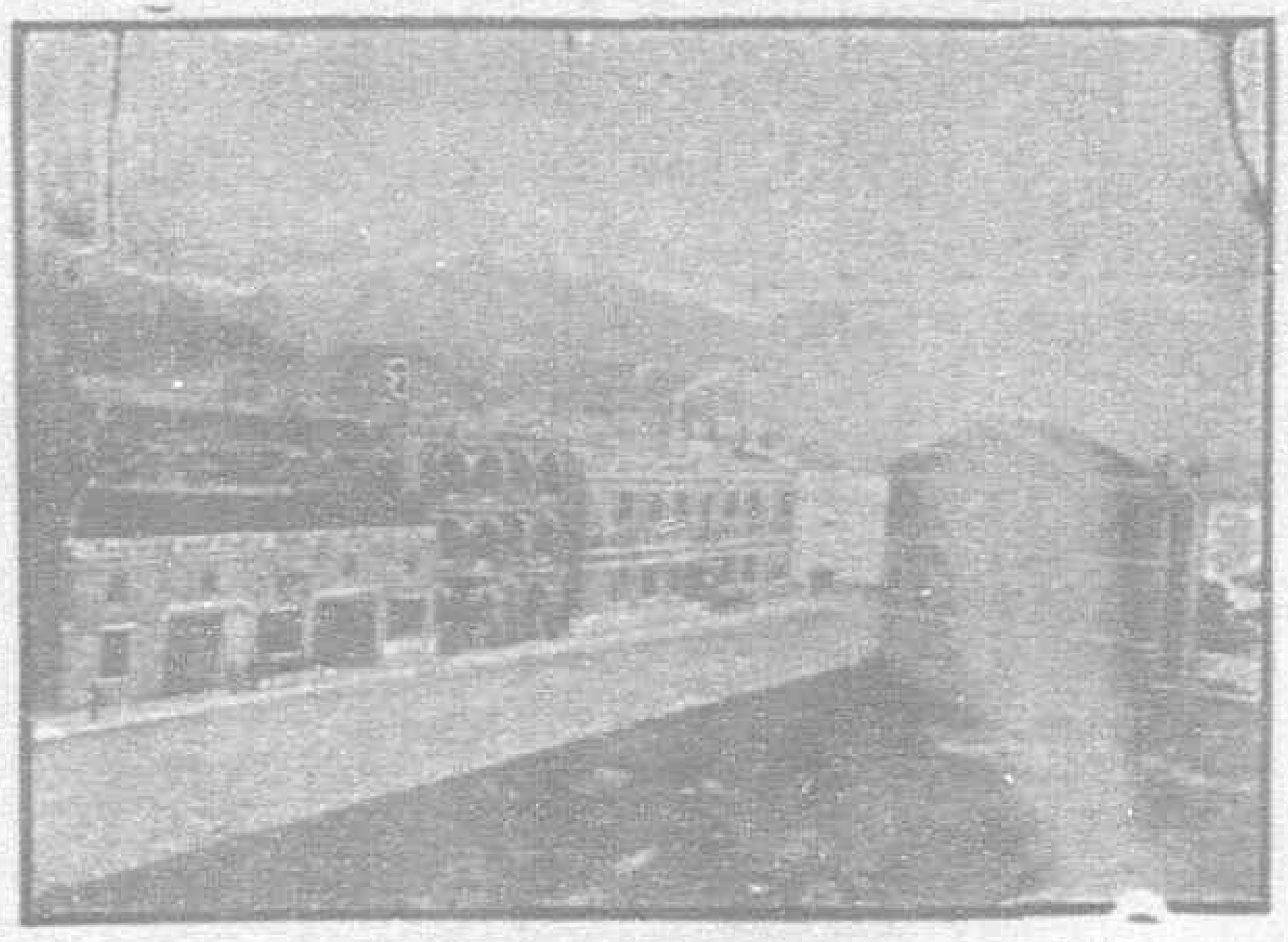

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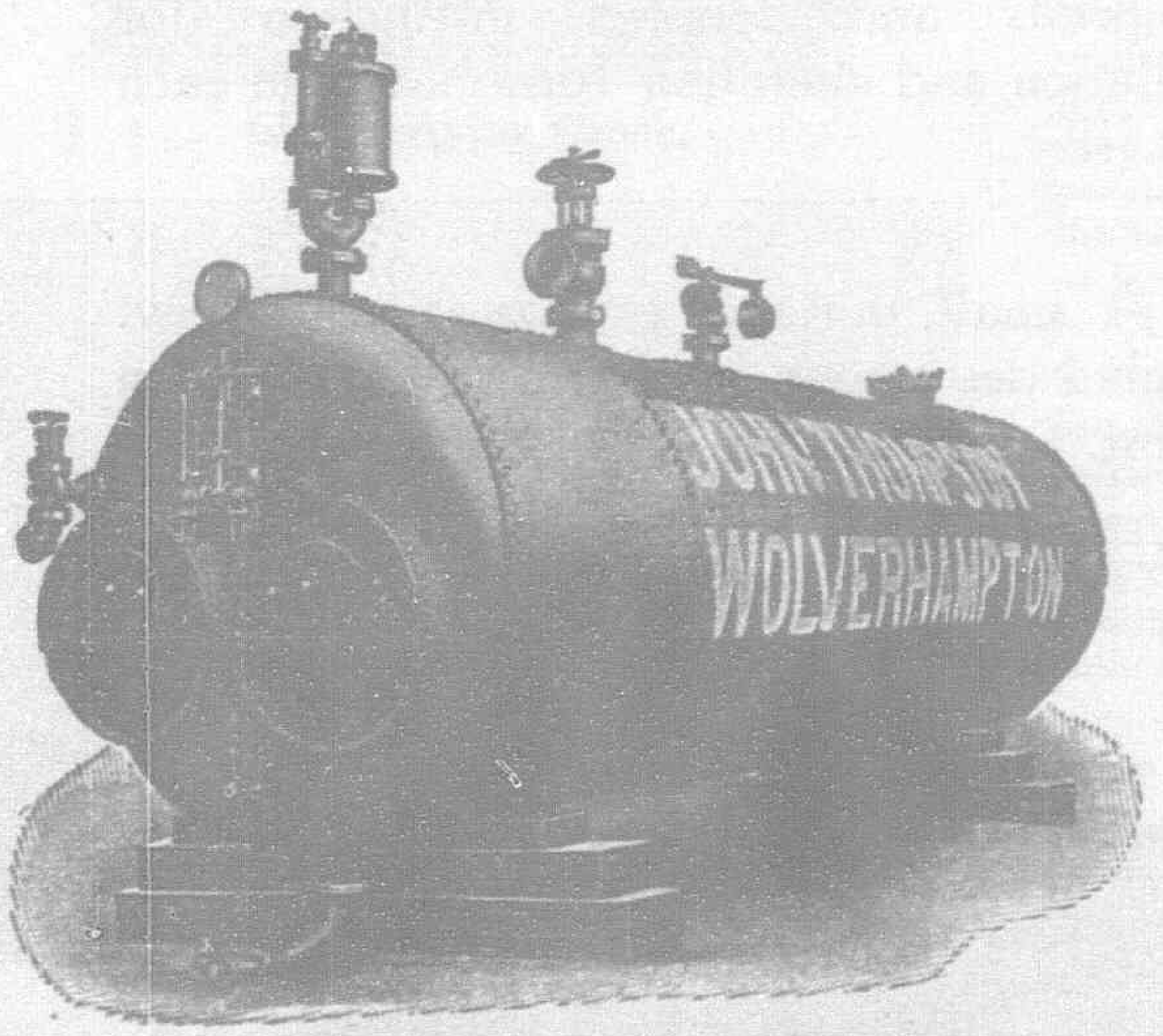

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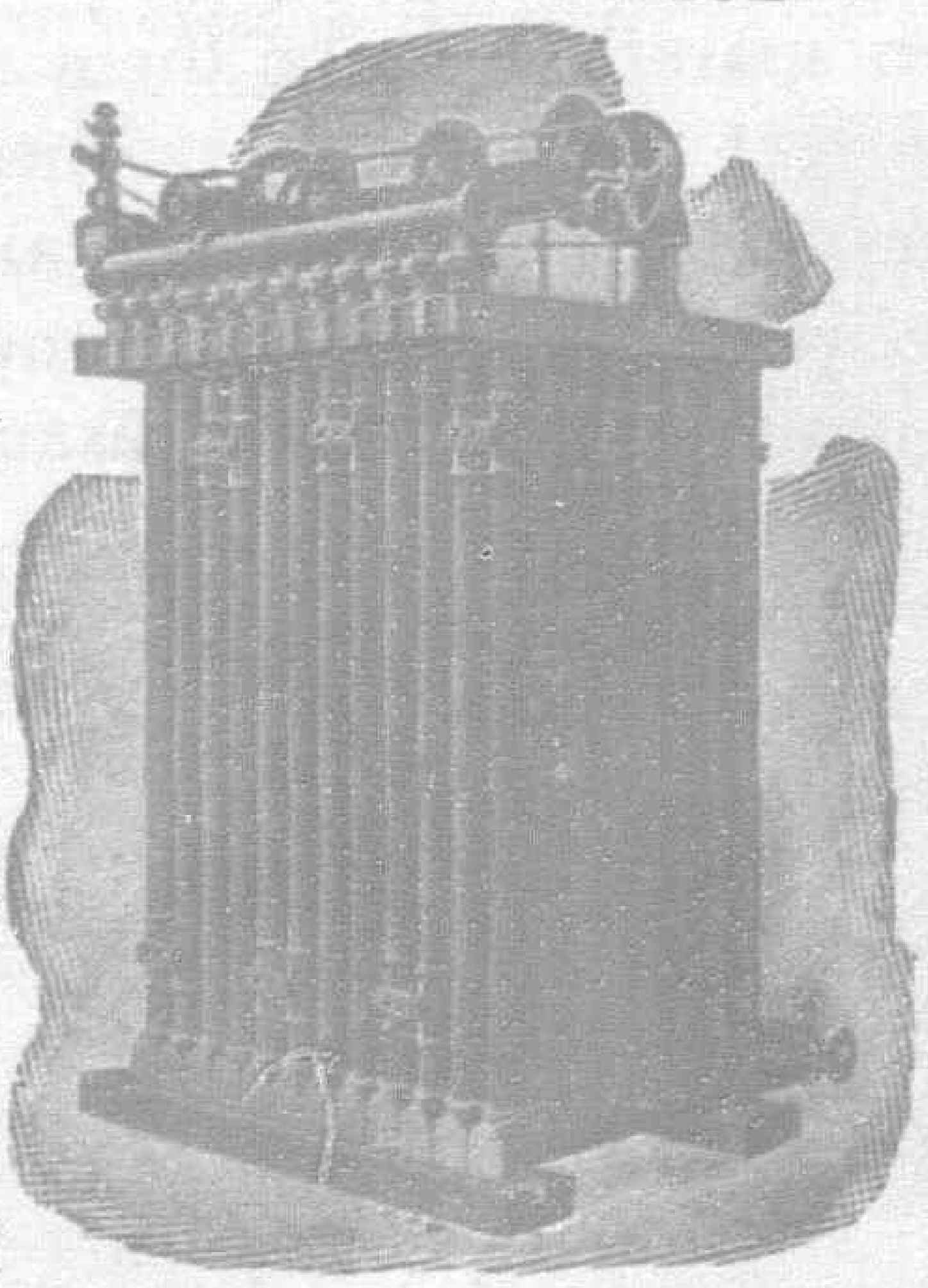

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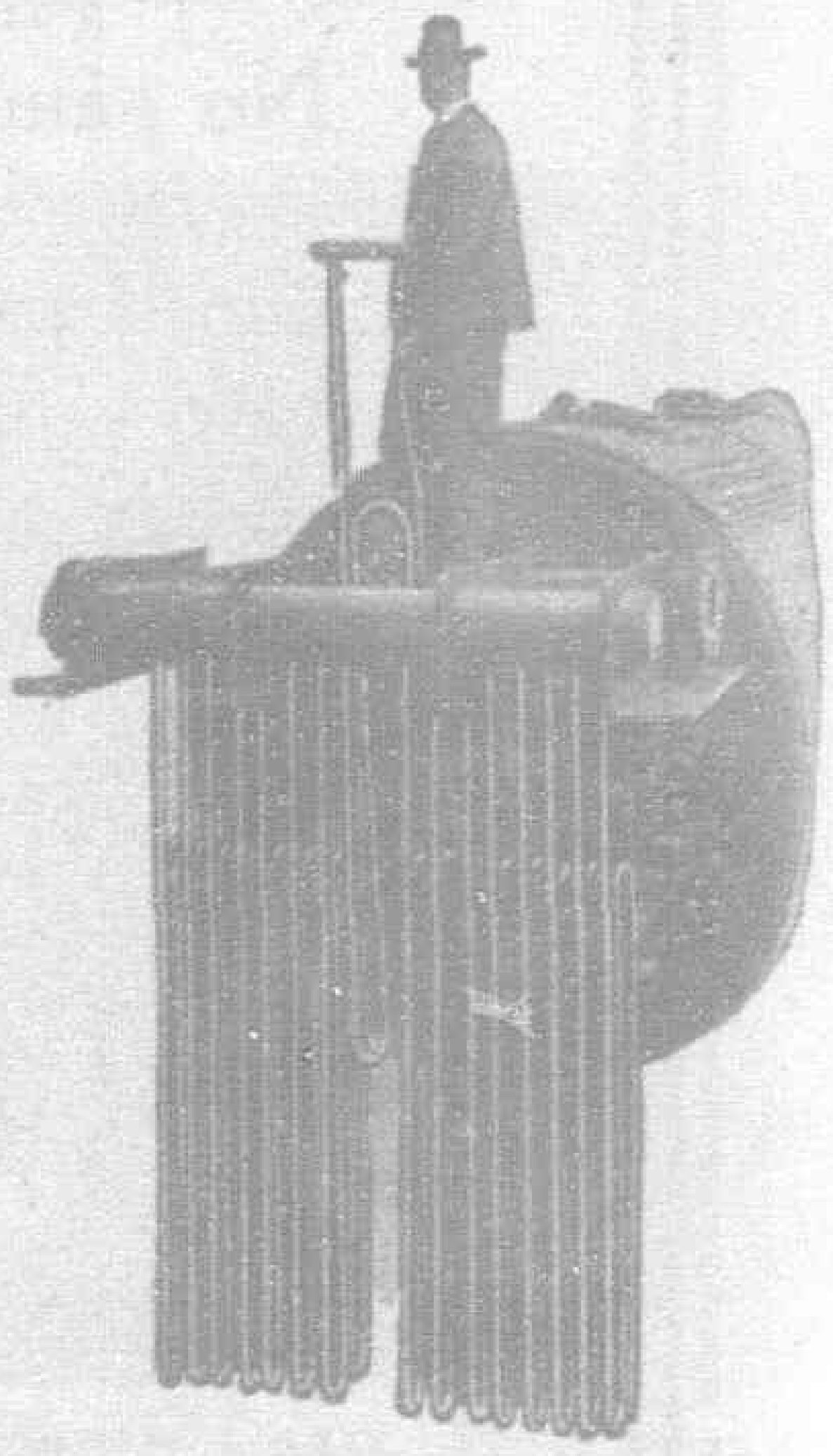

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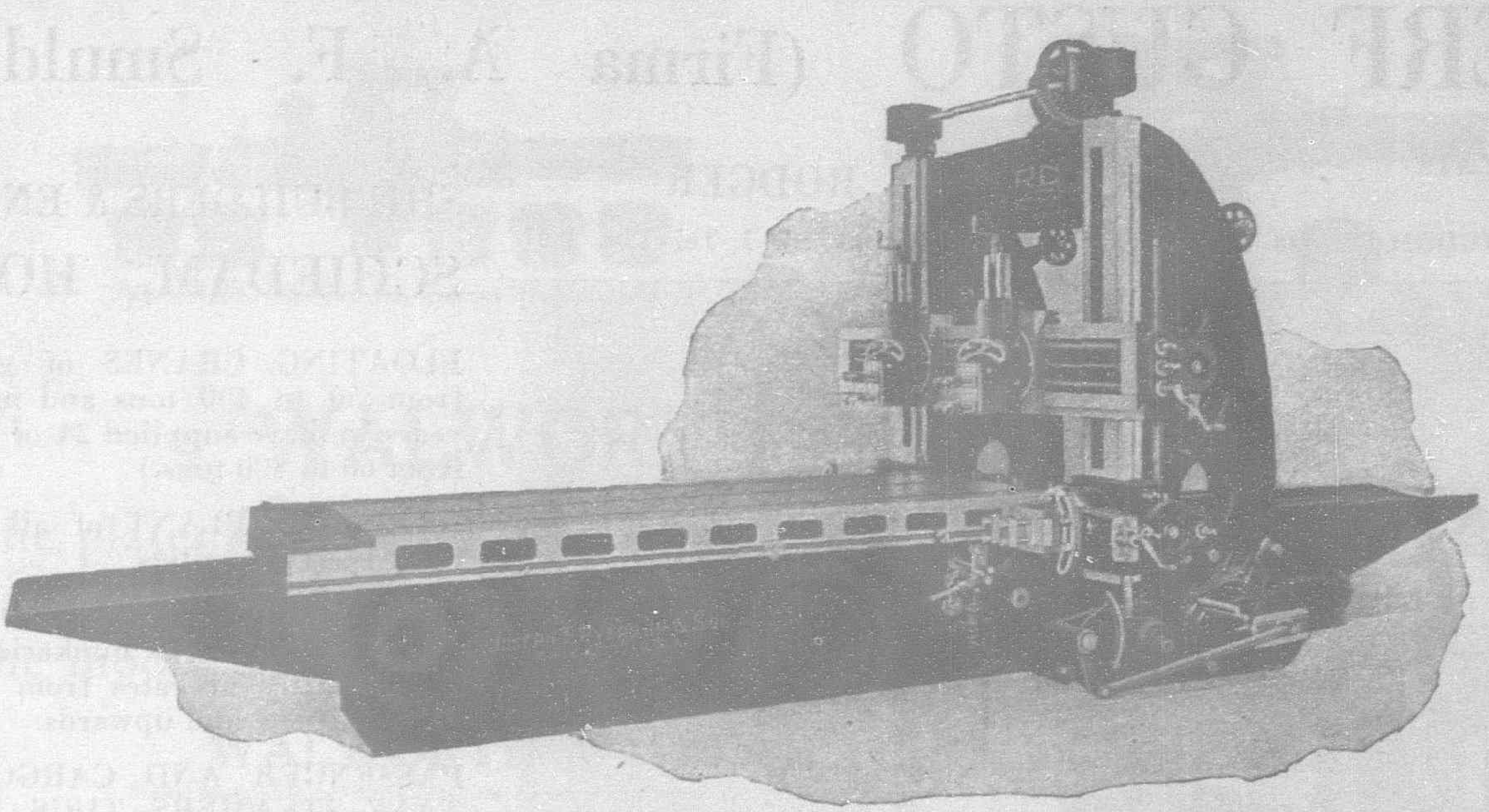

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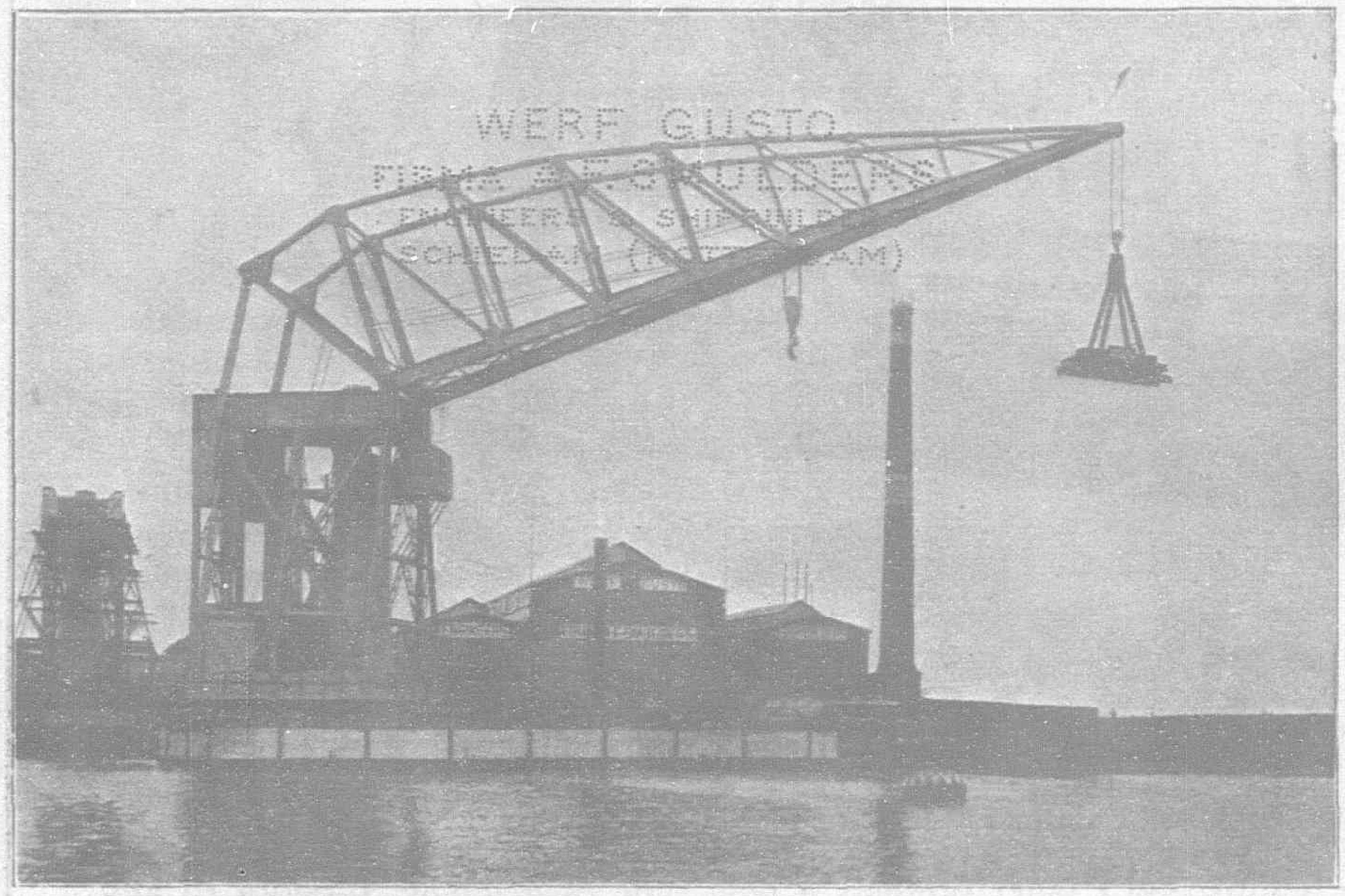

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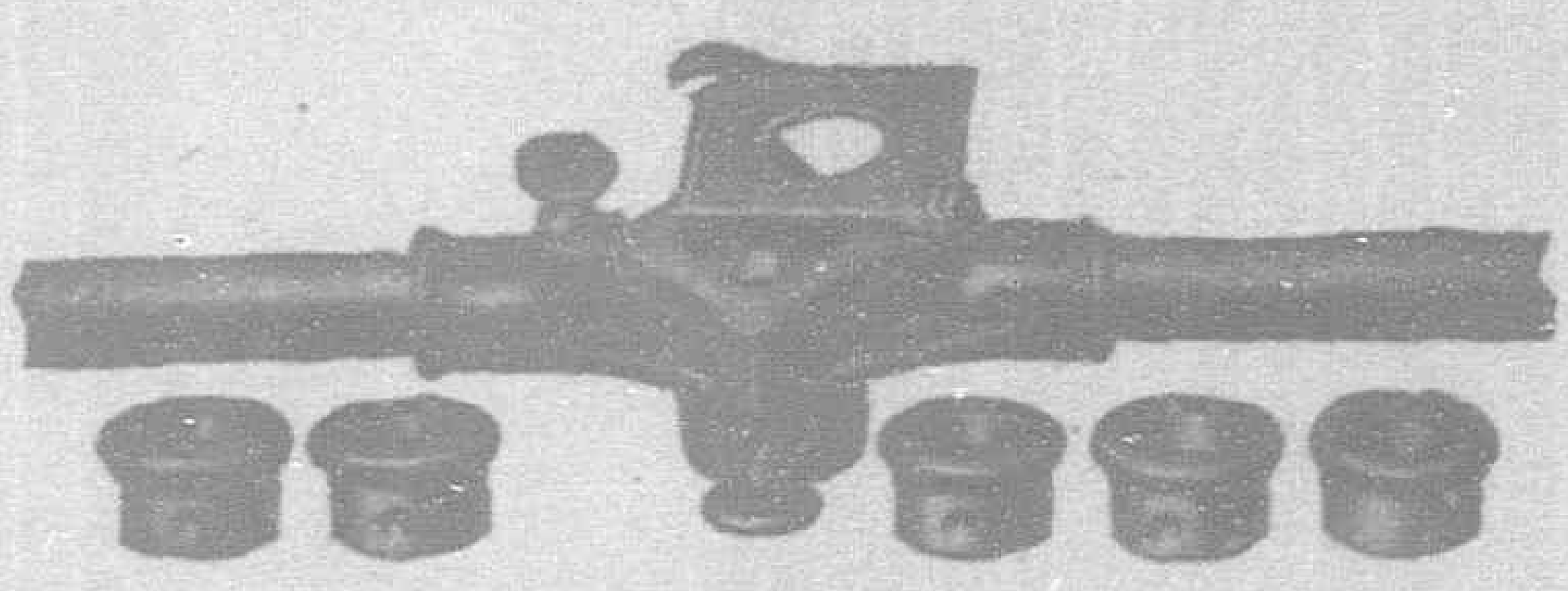

FIG. W4161. Nos. 0 to 1¼, without Leader Screw

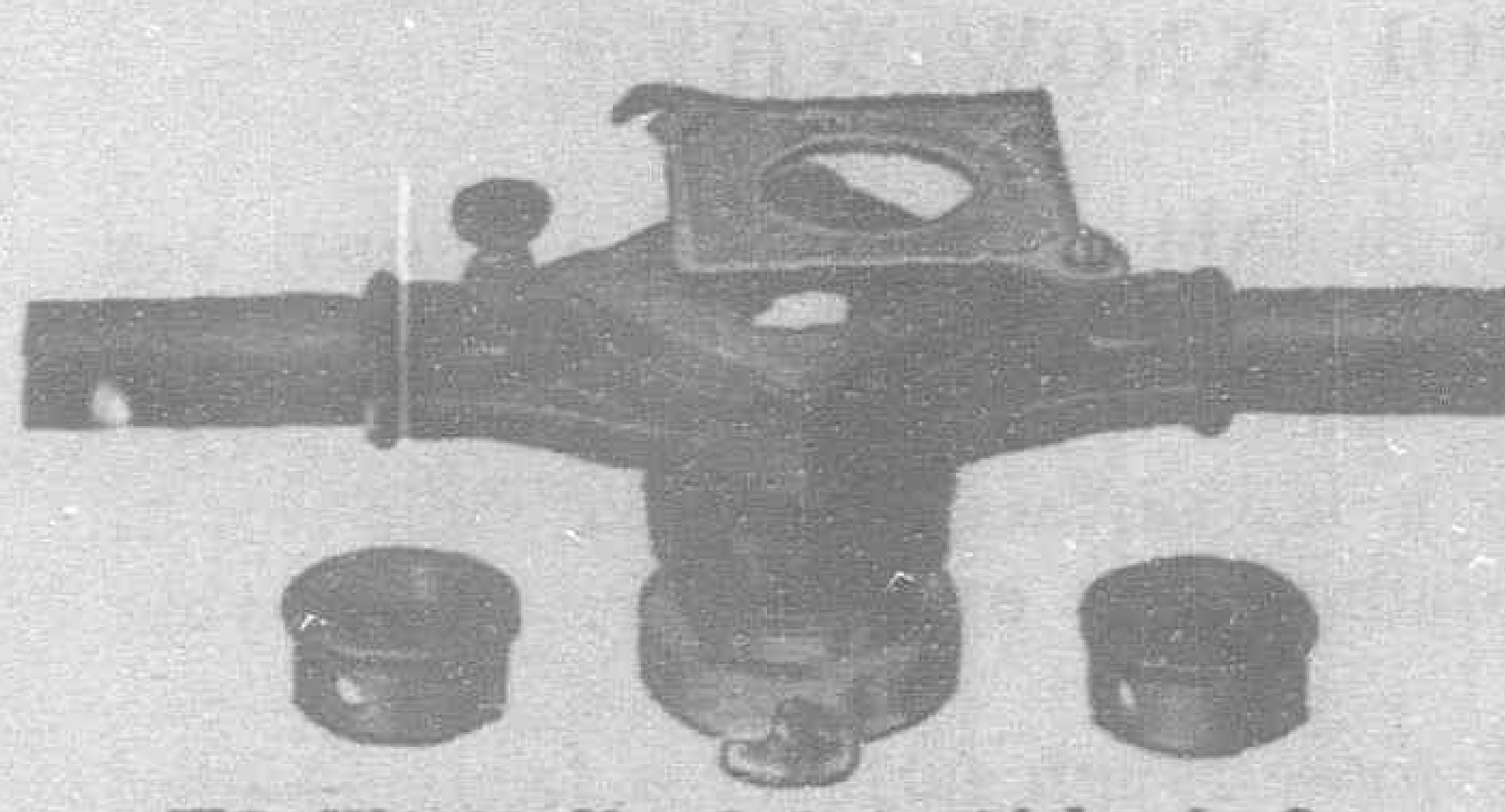

FIG. W4162. Nos. 2, 3, 4, with Leader Screw

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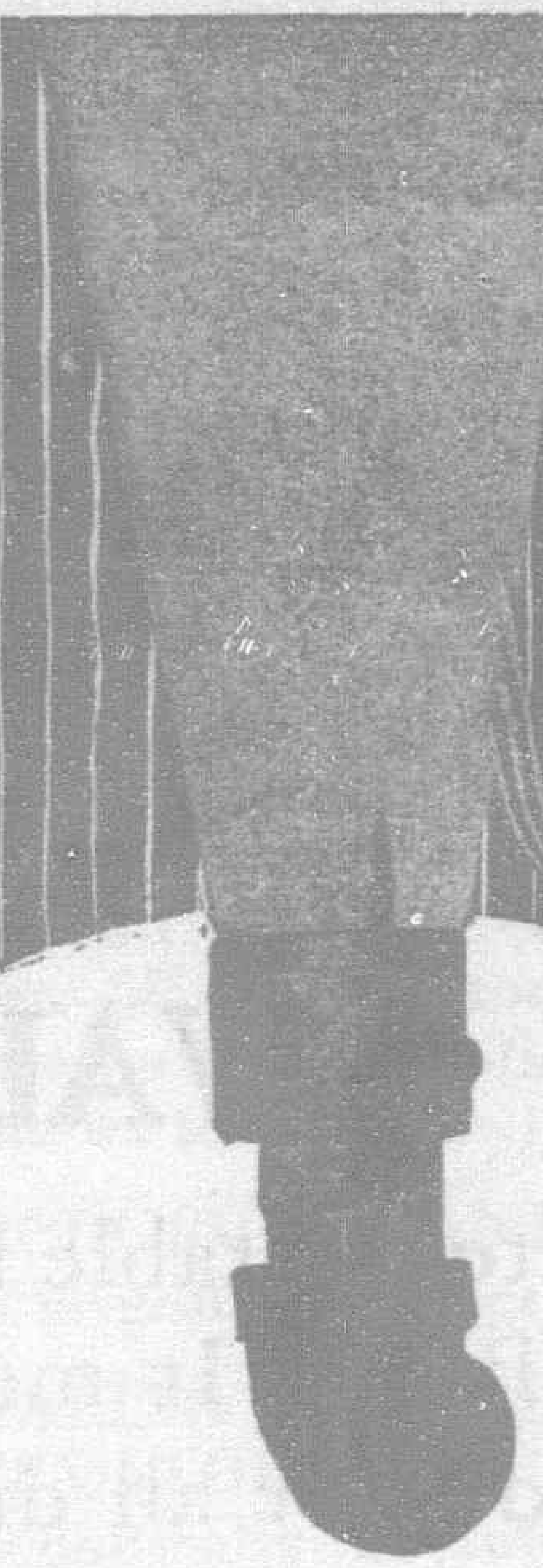

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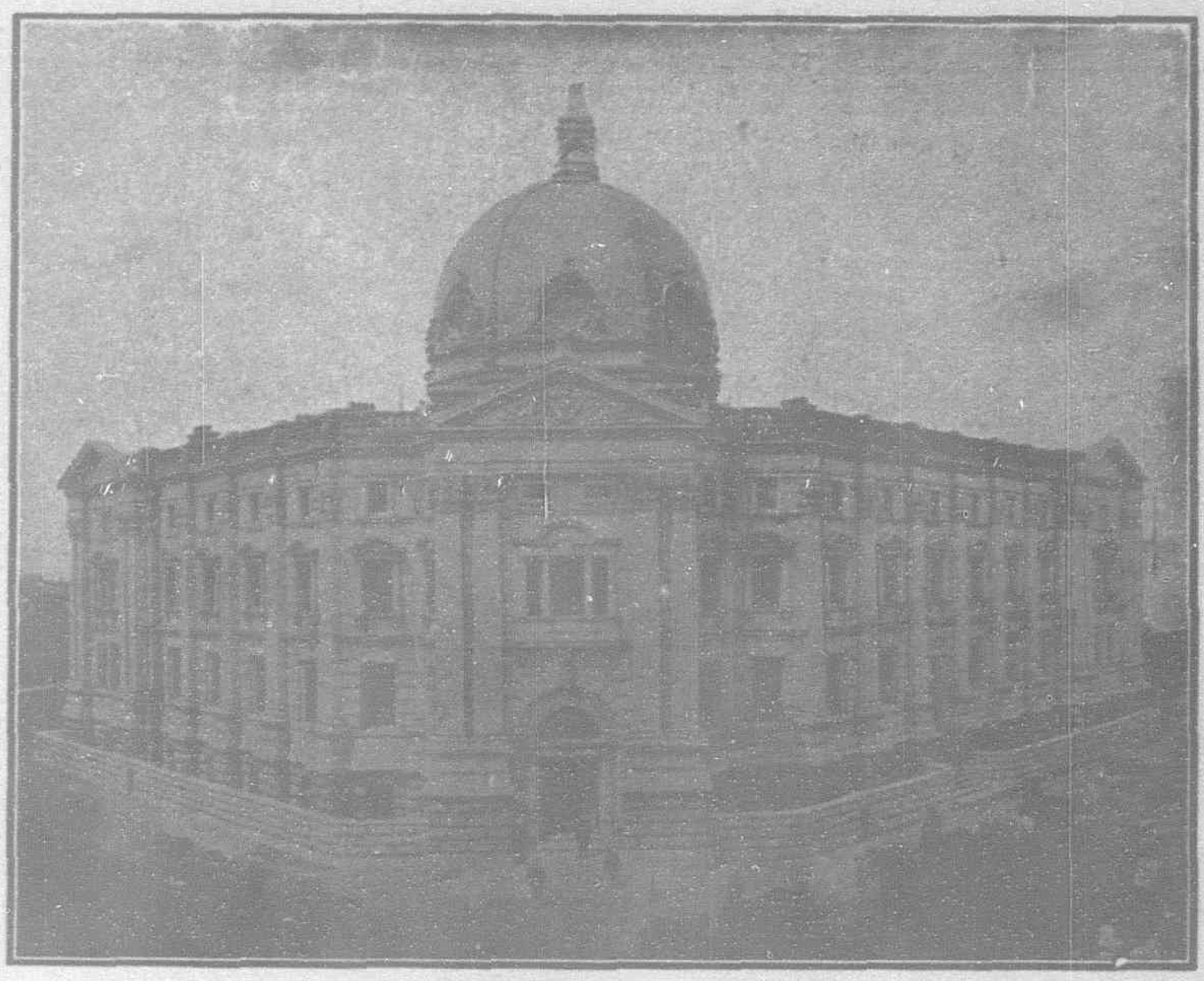

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVIII SHANGHAI, JANUARY, 1922 No. 1

The Market for Motor Vehicles in China

By Geo. Bronson Rea

THAT China offers one of the greatest fields for the expansion of motor traffic is being emphasized by the wide-spread demand for good roads, the organization of companies for their construction and the orders that have been placed for motor vehicles. A review of the market discloses an unusual activity in all sections of the vast country in opening up new communications for commercial and military purposes. While it is too early to say that road building in China has been taken up in that serious frame of mind that impels other peoples to gridiron their lands with arteries of communication, it may be said that a good beginning has been made, and, if funds can be found for continuous construction and maintenance, the future holds bright for the development of a huge market for motor vehicles of all kinds. This phase of China's development can be traced largely to the fact that for eight years, railway construction has been practically at a standstill, with very little hope that funds on a large scale will be forthcoming from abroad for the resumption of work. Cities and towns in the interior, which cannot hope to be connected by rail, are turning their attention to the cheaper method of road communication, which calls for little more than the use of the over-abundant local labor in grading, rolling and, in some cases, of breaking stone.

These encouraging signs are also traceable to the excellent campaign being carried on by the good roads movement in the interior. Could capital be more readily obtained for road-making purposes, a boom in the automobile trade would follow. Unfortunately, there is little security for foreign capital in such enterprises, other than that supplied by the central or provincial governments, and such advances would have to come under the scope of the consortium. The delays in arriving at some understanding whereby this international financial combination can come to the assistance of China, eliminates this method of financing the construction of new roads, and throws the burden upon private Chinese initiative.

It speaks well for the enterprise of the Chinese that many private road and auto-transportation companies have been formed, or are in process of promotion. Some of these schemes, like those in the Shanghai district, are of great importance calling for large sums to swing them. It also augurs well for their success that they are largely private enterprises controlled by the merchants who expect to derive their profits and maintenance costs from the operation of motor vehicles. Up to the present, aside from the service across Mongolia, the government seems to have left this field open to private initiative, and even after constructing highways at its own expense (as in the case of the Chefoo-Weihsien highway) has thrown the roads open to private companies who pay for the franchise to operate auto-transportation services.

If ways could be found for foreign capital to assist in this development through taking up the securities of the stronger native banks a great impetus would be given to the automobile trade with China. It would seem that here is a field that the many sino-foreign banks (as distinguished from those embraced in the consortium) could exploit to advantage. Although a review of the market for motor vehicles is highly encouraging, we would not have it thought that we are predicting an immediate boom. Far from it. All the elements are here, however, for a rapid development depending entirely upon the extension of new roads. It may be taken for granted that wherever such a road is built connecting one town or village with another, the automobile and truck will follow. Whatever aid or financial encouragement can be extended by foreign banks or investors to the Chinese banks who directly finance these roads, is so much capital contributed to the expansion of the automobile trade. All the elements are also here for the development of a business that will carry with it the old familiar clause giving preferential treatment to the nation supplying the necessary financial assistance. The struggle for the Chinese automobile trade will undoubtedly revive the system of financing roads, on the condition that certain types of automobiles or trucks are purchased; purely private engagements between banks, in which the government cannot interfere, or other nations claim that the door is being closed to them.

Notwithstanding the risks involved in financing enterprises over which no control can be exercised, we incline to the belief that these would be largely eliminated through foreign financial co-operation with the more important native banks, who would see to it that their interests were fully protected. Otherwise, left to purely native initiative and capital, the demand for motor vehicles will fall far short of foreign expectations. The competition for the sale of cars and trucks in China as the field widens, will undoubtedly pave the way for some measure of foreign financial co-operation with the Chinese banks, to ensure that orders for cars will be placed in the country furnishing the financial assistance. If American, British, French, German, Japanese, Norwegian and other capital can co-operate harmoniously and profitably with Chinese in the conduct of banking in China, it would seem that these institutions might assist in providing the much needed capital required for the construction of new roads and expanding the automobile trade in China. The field is wide and important enough for the creation of a special sino-foreign bank working in with the leading Chinese financial institutions to specialize in these securities. A most important highway is now being surveyed between Chengtu and Chungking in Szechuan, which we assume would be facilitated by financial assistance in the shape of long-time debentures. While it would be out of the question for foreign investors to hazard their money direct in such an enterprise, yet if these road bonds were issued through the Young Brothers Banking Corporation of Chungking, the strongest financial institution in Szechuan, it would seem that a way would be opened for foreign banks or sino-foreign banks to handle their securities. Nothing would contribute more to the advancement of trade in China than the building of highways in Szechuan, as for many years to come, the much-talked-of railway into this province must remain on paper. Roads that will permit the produce of this rich province to reach the Yangtze and be transhipped to the fleet of shallow draft steamers plying between the river ports and Ichang, constitutes the only immediate hope of opening up this province.

The importance of the Far Eastern market has been brought home to the American manufacturers of automobiles and the department of commerce is sending out to China a special automobile expert to study the conditions here and aid American manufacturers to increase their exports. The decision was reached by the commerce department in the middle of November to send the commissioner to foreign countries for surveys of automobile markets and help American builders who must have world-wide markets for their full-time operations. The commissioner, Mr. William I. Irvine, will sail from San Francisco on January 12.

The value of the China market is seen in the recent report of the British commercial attaché at Peking who says that "Motor cars to the value of over one million sterling were imported into China in 1920. The bulk of these cars came from the United States, but British cars are being seen in increasing numbers in the streets of Shanghai and other large towns. Unfortunately the cheapest British cars that come to China are far more costly than American cars of similar model and power, and, unless some drastic reduction in the price of British cars can be effected, Mr. Fox does not see any hope of their being able to compete successfully in the market."

"It must be remembered that as there are as yet no good roads in China, cars are chiefly used for town work, and there is no doubt at all that for crowded traffic and narrow streets with sharp turnings the American car is far more suitable than the British vehicle. When the roads in China permit of making long-distance runs, and when ability to climb hills is a factor that counts, then no doubt the British car will come into its own.

"In the meantime it is satisfactory to note that British motor-car manufacturers have begun to realize the possibilities of the China market and that several of our leading makers have recently concluded agency agreements with local garages. Motor trucks and lorries are coming into general use for transport purposes, and there should be a great future for this class of vehicle in China."

Further comment on the automobile trade in China appeared in *Finance and Commerce*: "China's last year's importation of motor cars amounted to the respectable figure of Haikwan Tls. 3,447,219, of which America supplied cars to the value of Tls. 2,191,664, Great Britain just a quarter of America's total, and Japan (re-exportations of foreign-built cars) just half of Great Britain's total, with Canada's share standing at Tls. 390,000. This is a remarkable showing. That China should import less than 3½ million taels worth of motor cars in a year when her total import trade was just less than Tls. 780,000,000 is perhaps not startling, but to those who know the conditions in this country it is a portent of the most striking development in motor-car distribution. For it must be remembered that China has not been a big buyer of motor cars until the last year or two. In 1912 her total purchases were valued at about a quarter million taels (of which Shanghai took two-thirds). In 1914 the total purchases did not amount to more than half a million taels. By 1918 it had risen to 1.3 million taels, so that it can be seen that only during the last two years has there been any rapid growth. Shanghai, of course, has always been the biggest buyer. Last year her share of the trade was Tls. 1,782,934 (compared with Tls. 589,877 in 1918), and Tientsin (whose purchases in 1912 were only Tls. 58,000, and in 1918 only Tls. 397,000) bought in 1920 cars to the value of Tls. 1,140,750. If one can imagine an inter-provincial network of macadamized high roads in China, the mind staggers at the probable number of cars that might be sold in this country during a decade. It must be said to America's credit, says the journal, that her agents are aggressive in "beating up prospects," and it is questionable whether the American car can be competed with on price. But it does seem a pity that British manufacturers are not alive to the great headway that motor car traffic is making in this country."

The table appended shows the number and value of automobiles and motor trucks imported into Shanghai for the years 1912 to 1920 :

AUTOMOBILES AND MOTOR TRUCKS IMPORTED INTO SHANGHAI, CHINA, 1912-1920

Year	Number	Gross and Value in Gold Dollars	Year	Number	Gross and Value in Gold Dollars
1912	116	118,495	1917	504	481,485
1913	162	205,600	1918	700	954,261
1914	217	278,996	1919	961	*1,491,741
1915	169	183,694	1920	1,397	*1,938,944
1916	350	371,732			

*Net value.

The review of road construction in China, commencing on the next page, compiled from the latest authentic and official sources, will help to give some idea of the increasing value of this market and the need for adequate support to the good roads movement facilitating its expansion. This survey is not complete, as limitations of space compel the omission of many items of interest connected with modern road construction and the establishment of motor transportation companies.

To Sianfu by Autobus

WHAT promises to be one of the most important transportation enterprises in China has been organized by Shensi merchants under the name of the Si Tang Motor Service Company, which will operate buses from Shenchow in Honan, to Sianfu, the capital of Shensi, a distance of 470 *li* (156 miles). The funds for the construction of the road and the purchase of automobiles is now being subscribed. It is estimated that $500,000 will be required. Perhaps there is not another road in China that witnesses such heavy traffic as this main artery between Sianfu and the Yellow River town of Shenchow. Along its route is borne the trade of northwest China and a large part of that of Tibet. Some idea of the traffic may be gleaned from Mr. Eric Teachman's description of a trip made over the existing road four years ago in his recent book, "Travels in Northwest China." Speaking of the railway trucks on the Peinlo line, which terminated at that time at Kuanyintang, he said "the sight of the swarms of Chinese packed into the string of open trucks running backward and forwards on this incomplete section testifies to the popularity of railway travel on this road and to the number of travelers." "The traffic on the road from Shenchow on is immense, and an almost constant stream of carts and pack mules laden mostly with cotton and hides on their way from Shensi to the coast, is met."

The traffic on the roads of the fertile and populous Wei River plain is very great, and it is one of the absurdities of modern China that no railway should as yet connect Sianfu, the metropolis of the northwest, with the coast. Railway construction on the plains of central Shensi means little more than laying the rails on the necessary embankment and building a number of small bridges across the streams which flow down from the Ch'ingling Shan into the Wei River . . . Failing railways, the construction of a few good trunk roads fit for motor traffic would be of enormous advantage to the province and could be undertaken, as far as the plains of Central Shensi are concerned, at comparatively small cost."

From this short description, it would seem that the company now being promoted by the merchants of Shensi has a brilliant future ahead of it.

* * *

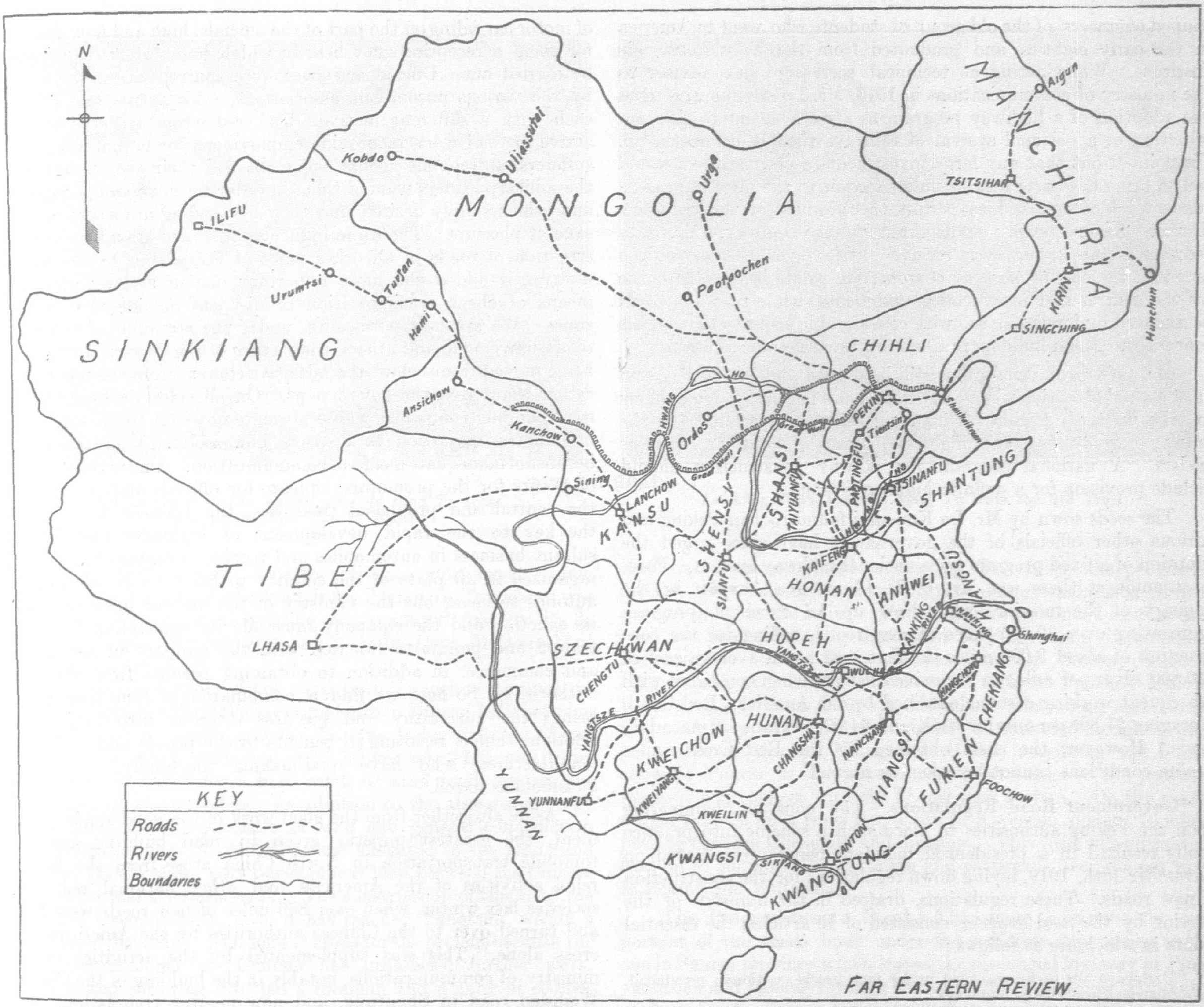
The Chin Chih Chen Communications Society of Ningpo propose to organize a long-distance automobile company.

* * *

Traffic has started from the Ta Da Wharf, Nantungchow to Tau Hua Oo. The roads office runs an automobile service for the transportation of goods and passengers at moderate fares.

* * *

Wang Ling-ke, owner of the Heng Feng Native Bank of Wuhu and others, are planning to establish a long-distance automobile service to run between Wuhu and Hsuanchen. They are also planning to construct good roads.



Suggested National Highway System for China designed by Mr. P. T. Chow, Road Expert in the Ministry of Interior, Peking. Mr. Chow's Scheme called for 51 National Highways having an Aggregate Length of 30,823 Miles, to cost about $10,800 Mexican per Mile. or a total of $332,878,000, Spread over a Period of Ten Years

Modern Roads and Motor Vehicle Transportation in China

IT seems but yesterday when THE FAR EASTERN REVIEW took the initiative in 1914 in the movement for modern roads in China and through its editor, Mr. W. H. Donald, influenced the Peking authorities to enter into a contract with an American syndicate headed by a Detroit automobile manufacturer to build a highway leading out from Peking. Although nothing came of this original venture, the necessity for good roads; if only for mandarin joyriding, was brought home to the Peking authorities, and little by little the streets of the capital and the main roads leading out to the immediate suburbs were macadamized and made safe for motor traffic. Since then, many miles of excellent highways have been constructed around Peking, bringing the Western Hills, Nanyuan and Tungchow within easy reach of the capital by motor. From the few cars owned by the highest officials a few years back, the capital now has 1,308 motor cars, of which 32 are owned by the government, 45 by the diplomatic corps and the remainder by individuals and the garages, an increase over the preceding year of sixty-six per cent. In these figures some idea can be gained of what the future holds out as other large Chinese cities are furnished with good roads. It is difficult to designate any particular Chinese official as the father of good roads as many have since taken up the movement and shoved it ahead until at present it is nation-wide, supported by an organization with headquarters in Shanghai. It may be said, however, that the original advocate of a nation-wide system of highways was Mr. Lo Kou-shui, one of China's foremost foreign-trained engineers, of the old group of students who went to America in the early eighties and graduated from the Troy Polytechic Institute. While acting as technical secretary and adviser to the ministry of communications in 1913, Mr. Lo strenuously urged the adoption of a highway program as a complement to the construction of a national system of railways then being drawn up. He pointed out that any large investment in new railways would fail to bring adequate returns unless feeders in the form of modern roads were constructed to permit the produce of the tributary districts being cheaply transported to the railway. Mr. Lo's recommendations, however, received little favor because of the fact that the cost of highway construction would have to be borne by the central and provincial governments, while railways could be financed by foreign loans, with considerable profit to the officials concerned. Road building in China buttered no official bread.

Mr. Lo's recommendations still hold good and should be given most careful attention when conditions again permit foreign bankers to take up the question of financing railways in China. If the railways are to pay, the highways must be built to serve as feeders. A national program for railway construction should include provision for a definite highway system.

The seeds sown by Mr. Lo Kou-shui found root in Peking and various other officials of the government have since urged the adoption of a fixed program for a national highway system. Foremost amongst these was Mr. P. T. Chow, road expert in the ministry of the interior, who drew up an excellent program aggregating over 30,000 miles of new roads, calling for the construction of about 3,000 miles the first year at an average cost of $10,800 silver per mile, an excessive estimate when compared with subsequent working costs as obtained by the American Red Cross, averaging $1,800 per mile for earth, and $4,000 per mile for macadam roads. However, the costs obtained by the Red Cross under famine conditions cannot be taken as normal.

Government Road Regulations.—The constant hammering upon the Peking authorities to place such a scheme into practice finally resulted in a presidential mandate being promulgated on November 15th, 1919, laying down regulations for the construction of new roads. These regulations, drafted in the ministry of the interior by the road experts, consisted of 15 articles, the essential points in which are as follows:

> "Highways are to be classified under four heads—national, provincial, *hsien* (district), and village highways.
>
> "The national highways are to be those between the capital (Peking) and the provinces, or special administrative areas; between the capital cities of two different provinces, and between strategical points, harbors and other places of military importance. The width of a national highway is to be 50 feet (Chinese), or more.
>
> "Provincial highways embrace those between the capital city of the province and the different *hsien* cities under its jurisdiction; between different *hsien* cities; and between railway, mining, commercial and industrial centres, and places of military importance within a province. The width is to be at least 30 feet.
>
> "The *hsien* highways are to be those between the *hsien* cities and the rural districts under its jurisdiction; those connecting the different rural districts of a *hsien*; and those connecting a *hsien* city with river or sea ports, or railway, mining or industrial centres in the neighborhood. The width of *hsien* roads is to be 24 feet or more.
>
> "Village highways are to be those between different villages, those connecting the villages with schools, factories and other public works in the neighborhood. The width of these roads is to be decided by the public bodies of the centres concerned.
>
> "National highways are to be designed by the ministry of the interior. Provincial highways are to be designed by the highest provincial officials concerned, who will, however, have to submit their plans to the ministry of the interior, which will also decide what sections are to be built, and the time in which they are to be completed. The ministry of the interior reserves to itself the right to create special organs for the construction of national highways under its direct control.
>
> "The *hsien* highways are to be planned by the district magistrates who are to submit their proposals to the provincial authorities. The work of construction is to be carried out under the direction of the magistrates, together with the local self-governing bodies of the districts.
>
> "The width of bridges over canals or creeks is to be fixed according to the width of the type of highway."

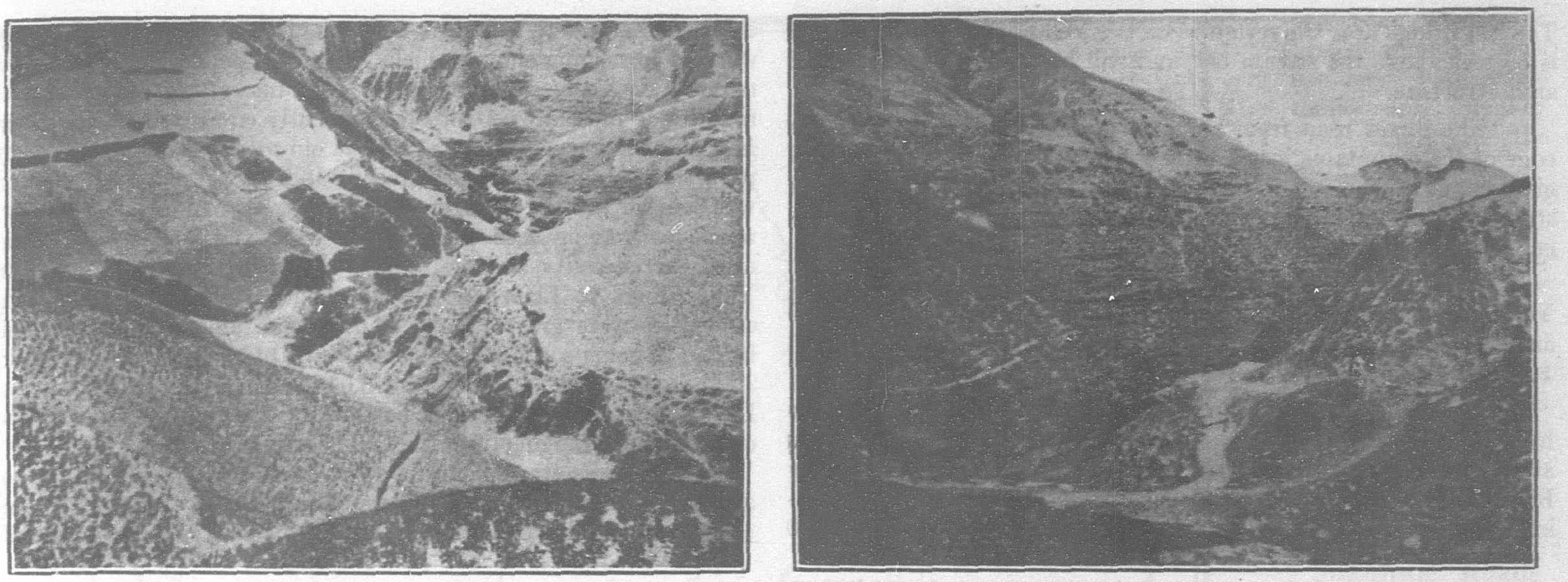
Experience seemed to place these regulations on a par with all others that have flowed out from Peking in a constant stream since the establishment of the republic, but the increasing love of motor car riding on the part of the officials, high and low, assured for them a reception that held out high hopes that they would be carried out. Official activities were spurred on in the north by the various automobile associations, sales agents and others, each with a different motive. The red cross society became active in road work to provide employment for famine and flood sufferers, automobile agents and clubs had their eye on business, the military leaders wanted them in order to move troops rapidly, and others simply desired smooth roads leading anywhere for the sake of pleasure. The same influences are now assuring the construction of roads in all other parts of China, but to the above motives is added the more important one of seeking adequate means of cheap transportation in districts outside the railway zones. We are now witnessing, under the stimulus of the good roads movement and others, the picture of the Chinese authorities being moved from below, the initiative coming from the merchants rather than from the government. On all sides we hear of new road building companies whose ultimate object is to provide automobile transportation to districts now isolated and stagnating because of inadequate means of communication. Under the stimulus of profits for the promotors, squeeze for officials and revenue for the central and provincial treasuries, the Chinese have found the key to the rapid development of highways and its resultant business in automobiles and trucks. Companies are being organized in all parts of the country to build roads and operate autobus services, but the ministry of the interior must first give its sanction and the company must file its application for registration and permit to function with the ministry of agriculture and commerce, in addition to obtaining permits from the local authorities. So here we find a combination of conditions which brings the authorities and business interests into harmonious relations that is resulting in benefits to the people and to foreign manufacturers who have road-making machinery, tools and automobiles to sell.

Aside altogether from the good work of the good roads movement, the greatest impetus given to road building and automobile transportation in North China arose from the famine relief activities of the American and other national red cross societies last winter, when over 856 miles of new roads were built and turned over to the Chinese authorities by the American red cross alone. This was supplemented by the activities of the ministry of communications, notably in the building of the Chefoo-Weihsien road in Shantung, and now nearing completion. The government recently issued invitations to the public for tenders for the right to use the road for autobus services, the recepits from such franchises to be paid into a fund for road maintenance. Branches from this main highway are to be constructed that will open up the entire northeastern part of Shantung.

North China Roads.—It is, however, in North China that the most progress has been made to date in road construction, where we find the road between Tungchow and Tientsin well under way. A road between Tientsin and Paotingfu, the two capitals of Chihli province, has been built by the military governor, but will have to be reconstructed before it is fit for use by motors. An article dealing with the red cross roads in North China appeared in the October number of THE FAR EASTERN REVIEW. We reproduce the map which shows these roads and the wells sunk in Chihli.

Peking-Tientsin Highway

This road has received more publicity perhaps than any other similar enterprise in China and it has been difficult at times to follow its financing, its route and progress of the work. It was first proposed in 1917 by the American flood relief committee under the leadership of Minister Reinsch and Roger S. Green of the Rockefeller foundation. The American red cross offered to contribute $100,000, if the Chinese would give an equal amount. The red cross money was to be used for the payment of flood-sufferers as laborers on the construction of the road. The Chinese share was to come in materials and the Chinese government was to



SHANSI ROADS

Looking down to the Valley towards Jung Tu from top of the Pass (Le Ja Wan)

Looking down towards Jung Tu from the old Trail

arrange the right of way. Due to political conditions in China, only the first section of the road from Peking to Tungchow was completed. The work of building was managed first by R. A. White of Frazar & Company and later by Capt. McDonnell of the 15th infantry, U. S. A.

For the completion of the road from Tungchow through to Tientsin a loan of $250,000 was entered into in June of 1919 between the metropolitan bureau and the Banque Industrielle de Chine. The total distance is estimated at 98 kilometres, 12 metres wide. The agreement called for a hard earth or sand road, the surface maintained by steam rollers. In addition to the above sum to be used entirely for the purchase of land and general construction work, a further sum of $400,000 was allocated to the road fund from the 1914 Pukow port development loan between the Chinese government and the same bank. The construction of this road has proceeded spasmodically, until it has reached Yangtsun, within a few miles of Tientsin. And here it stops for the present because the police commissioner of Tientsin has prohibited further work, arresting and throwing into jail a foreman and a gang of coolies, under the pretext that the money for the right of way in his territory has not been advanced, and when this was made good, he held that the graves had been unduly interferred with. With this exception the whole road is now in fairly good condition, enabling through traffic of a kind to be caried on. A few short sections have to be repaired, and the sand hills removed in other parts and the "road" will be completed. The prevailing winds in this section of China will always carry the sand and make drifts along the road, according to those who have made the trip. One or two trucks have successfully negotiated the trip between Peking and Tientsin, while many motorists have used the road, making an average time of about five hours between the two cities.

Kalgan to Peking.—The road from Peking to Kalgan has generally been considered impassable except to carts but Mr. Charles Coltman, of the Mongolia Trading Company, and Mr. Williams recently brought two Dodge Brothers cars from Kalgan to the capital over the road on what they termed a "wonderfully rough" trip.

The distance by rail is 116 miles but the road is several miles longer, probably nearer 125 miles. Mr. Coltman considers it marvellous that they arrived with whole cars. They negotiated seemingly impossible stretches of alleged highway, seamed with deep cart wheel ruts and ditches.

Shansi Roads

The governor of Shansi, General Yen Hui-shan, has shown considerable interest in road building and under his initiative a road has been completed connecting Taiyuanfu, the provincial capital, with Taikuhsien an important educational centre distant over 30 miles to the south. Under the new provincial system this road will be continued further south to Pingyangfu, distant from Taiyuan 140 miles. This will pass through Sukow, Kihsien, Pingyaohsien (connecting at this point with the Fenchow-Yellow. River road), Kiehsui, Lingshih, Hwochow, Chaocheng and Hungting. At Pingyang it will undoubtedly be extended along the time honored route through Kiangchow, Wensi, Anyihsien and Chiehchow to Pukow in the extreme southwest corner of the province where it will connect with the Shensi road system. On the north, a road is to be built from Taiyuanfu to Kuohsien, distant 70 miles, passing through Chengtsin and Sinchow. This road will ultimately lead on to the north to Tatungfu and eastwards over the old road to Peking and Wutaishan.

The Pingyao-Jungtu Road.—The most commercially important of the roads built under the red cross supervision is the one in Shansi province which leaves the provincial highway at Ping-yao-hsien and passing through the large city of Fenchow terminates at Jung-tu the Yellow River, providing a water outlet to an immensely wealthy district. Writing in the *China Press*, Mr. Wes Williams describes this road as follows :

"The Ping Yao-Fenchow road in its passage westward over the plain crosses the entire drainage area of the province. The road has no grades as there is a difference in the elevation of not more than 17 feet in twenty miles. This road at the top is 22 feet wide and has an average height of a least three feet and a half.

"The dirt work was paid for at the rate of ten cents gold per hundred cubic feet. Later the road was surfaced with ashes. There are only a few small curves and the road could be used at any time for a railroad bed. The only problem in this stretch of road is the bridge across the Fen River. It is expected that the bridge in use at the present time will be washed out in the spring rains. With this in mind, not much money was expended on it.

"The Yellow River road out of Fenchow west crosses the divide between the two rivers Yen and Yellow. Fenchow itself has an elevation of 2,200 feet. To the top of the pass, a distance of 24.9 miles there is an average rise of less than three feet per hundred to an elevation of 5,200 feet above sea level. The decent on the Yellow River side of the pass does not go down so far because this river is higher than the Fenchow plain.

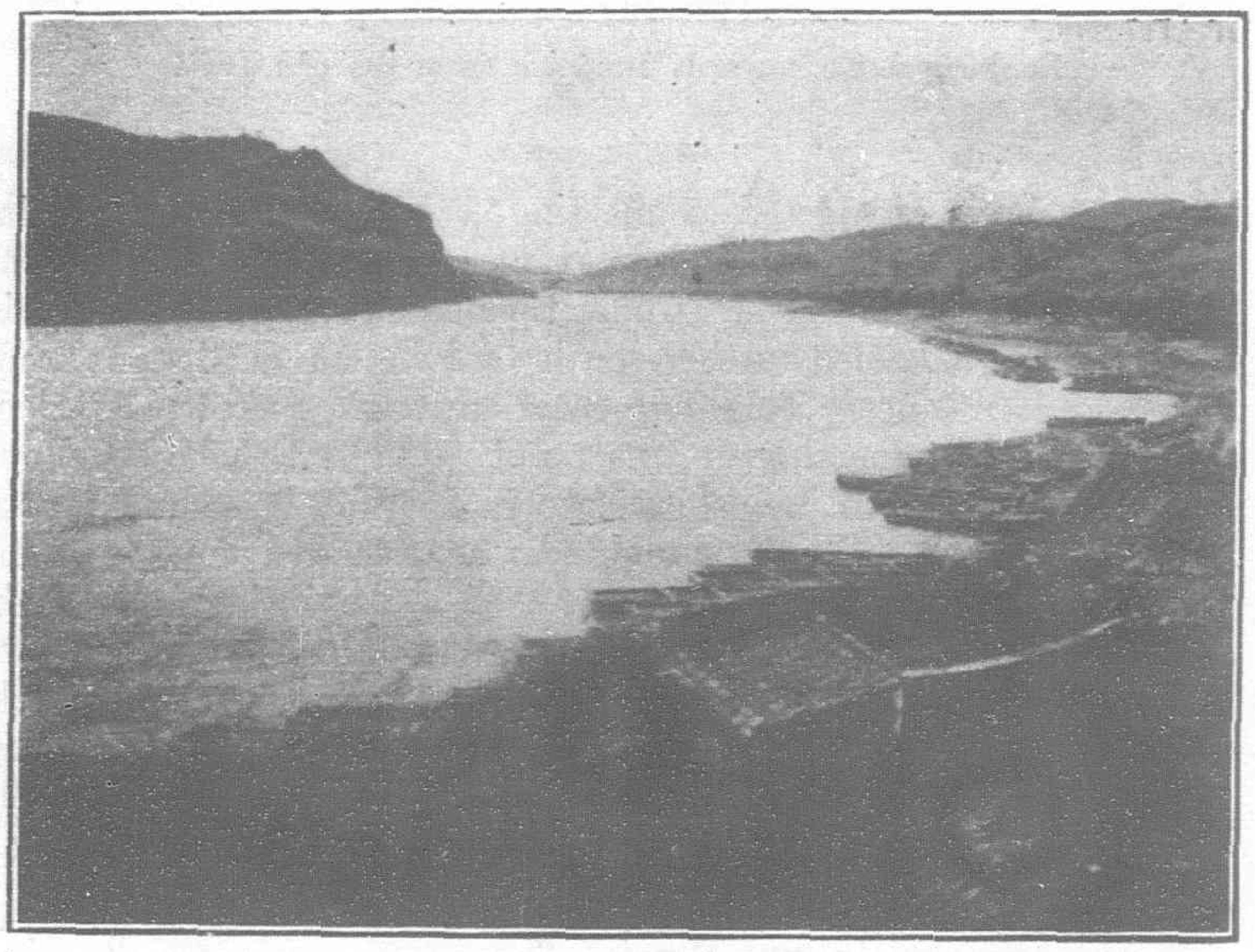
"The road winds around mountains and twists upon itself like a huge serpent. There are fills 90 feet deep, cuts 60 feet deep running for long distances through loess formation and stretches through solid volcanic rock which cost $1.75 gold per cubic foot to blast out a road. In all there are 22 bridges, and 454 culverts.

The last bridge near the terminus on the Yellow River at Chung Tu is 85 feet above the stream bed and will be a two deck, spondrell arch structure.

"The direct road from Fenchow to Taiyuanfu runs along the edge of the mountains just a little above the level of the plain and gives many fine views. It has required only a small amount of stone-blasting but there is one stone bridge which has twelve arches each being twenty feet in width.

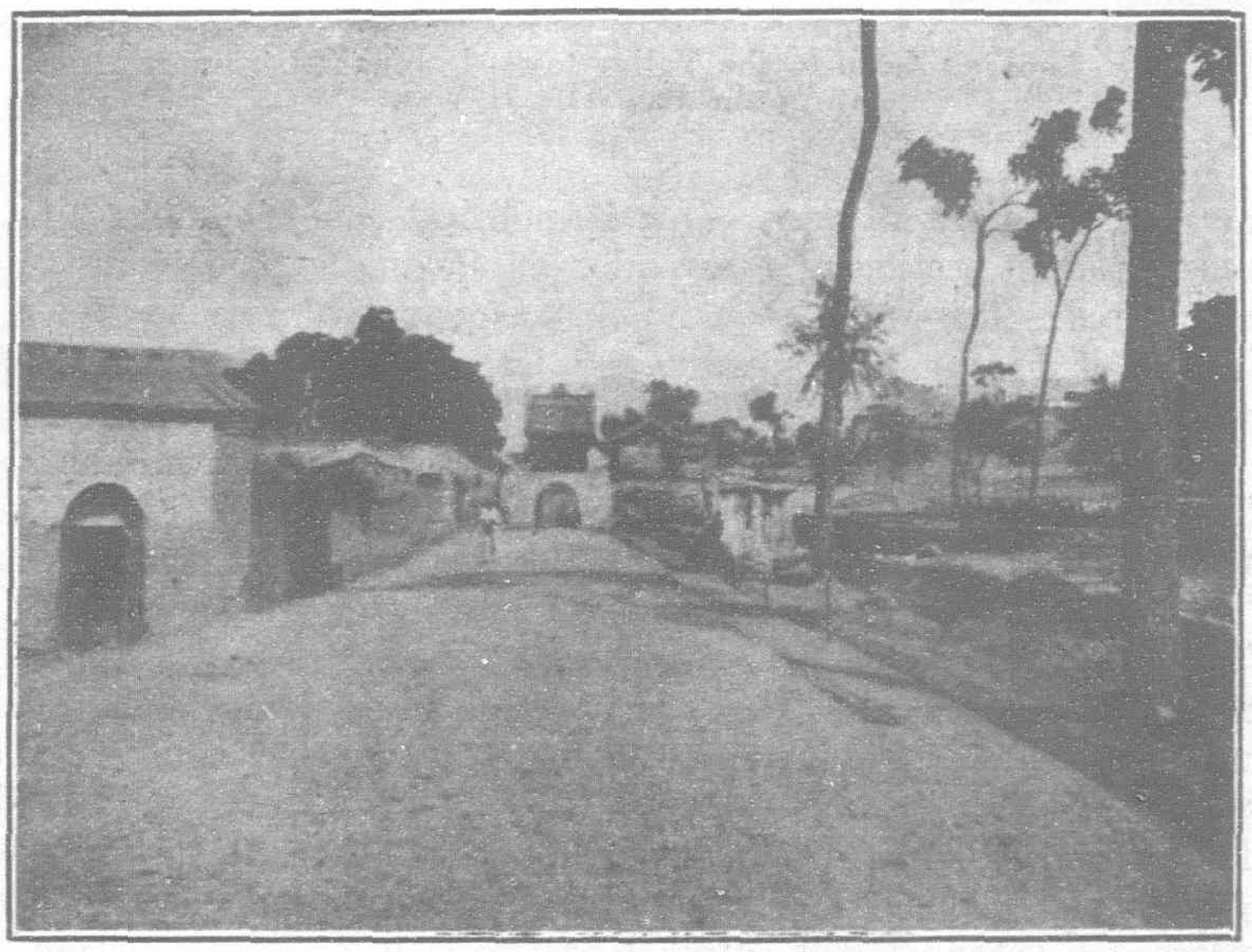
"For these three roads and the narrow road from Fenchow to Yu Tao Ho, the American red cross appropriated silver $721,000 and the Shansi famine relief society (also largely American funds), $250,000 for a total of 173 miles of road.

"None of the three main roads is fully completed. Contracts have been let and the work is under way to finish the big bridge at the terminus and a stretch of stone blasting on the Yellow River road. The contracts call for an additional outlay of approximately $75,000 of which a further grant has been made of $25,000 by the Shansi famine relief society but where the remaining $40,000 is to come from none of the field directors were in a position to say.



Looking North up the Yellow River at Jung Tu, the end of the Red Cross Road

SHANSI ROADS



Entering Mut-Sun

"Half of the 173 miles of road passes through difficult mountain territory and 30,000 laborers were required since operations started in March. At one time they had as many as 50,000 laborers. In all they employed 75,000 different men. Captain McDonnell, U.S.A., was the first engineer to make an investigation of the possible route and in April Major Joseph W. Stilwell took charge as head engineer. His task was an extremely difficult one.

"There were all sorts of questions pressing for decision, complicated problems of construction, supervision of overseers and laborers largely new to such work, the base of supplies a long distance away and none too large a staff of assistants to help him. The enterprise owes much to his tireless energy and practical judgment. Another U.S. army officer who served as engineer for six weeks was Major Horsfall.

"On August 1st, when Major Stilwell left, Mr. Carl Hildebrand, an engineer loaned to the American red cross by the Standard Oil Company, took charge."

The Pingting-Liaochow Road.—Second in importance to the Pingyao-Jungtu road in western Shansi is the one in the eastern part of the province built by the red cross engineers which runs south from Pingting to Liaochow through the heart of the richest coal, iron and pottery district in China. This road brought new life to a section stagnating for lack of communications. Prosperity came to the potters who turned out vitrified clay pipes and drains at extremely low costs while the iron workers found steady work in furnishing shovels, picks, hammers, rollers and other tools required in road construction. A very interesting report on this road by John Andrew Goette was recently circulated by the *Chun Mei News Agency*. He says: "The old road was merely a donkey path that scrambled over river beds and over peaks and which in wet weather was very dangerous. The people had never seen a cart much less having used one. Hence when the famine struck this area, the necessity and desirability of a road running south from Yang Chuan to Liaochow was apparent to all. The engineering difficulties were great. Yang Chuan is on an elevation of 2,184-ft. and in going south a road would have to cross mountain peaks 2,511-ft., 3,128-ft., 4,834-ft. and 5,035-ft. and then drop down to Liaochow at 3,688-ft. in addition to which it would be necessary to cross 12 rivers ranging from 200 to 1,900-ft. in width.

"Work was started late in February with famine relief labor and by August 10th most of it was finished, there remaining some culvert and bridge construction to be finished. The cost per mile is $7,000 Mex. which includes bridges, culverts, surfacing, food for the laborers, medical and engineering supervision, etc.

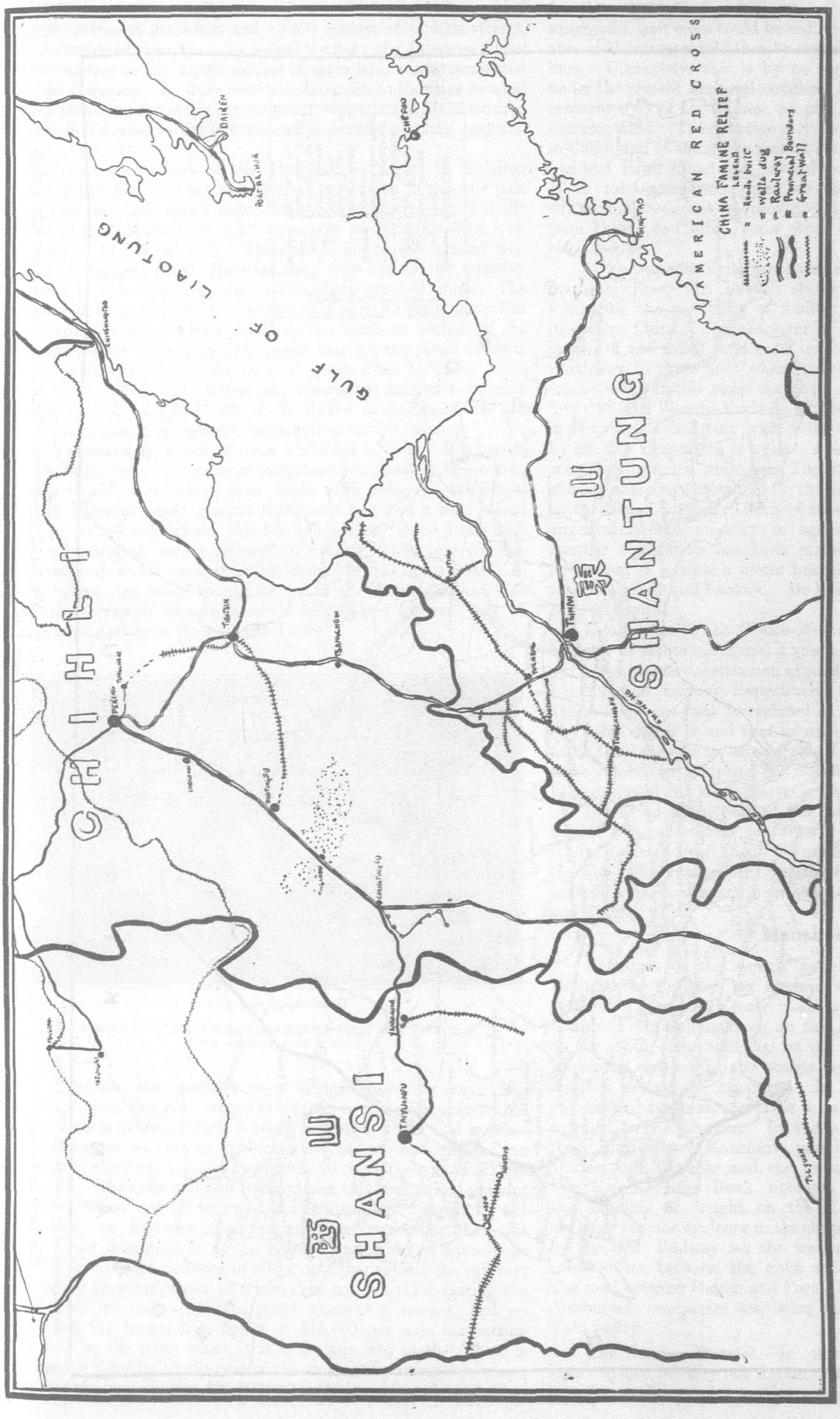
"There were constructed 237 bridges and culverts ranging 135-ft.-in length. Over a thousand feet of stone retaining wall was built; 54 dips., 20-ft. wide and from that same length to twelve hundred feet long were paved.

"The road has a mean width of twenty feet and in some of the sharper curves on the high peaks it broadens out until it is nearer thirty.

"Surfacing is well along, there being three materials employed. On the level stretches the loess is packed down very hard. Where the road runs close to the blast furnaces, iron slag is used to good advantage. This makes a pretty looking black road which is practically dustless and not subject to bad cutting up. The third method is loose stones gotten from the blasting operations, which are well tamped. In one place it was necessary to blast about a mile of solid rock to put in the road. In others the loess was cut away to a depth of thirty or forty feet.

"The greatest grade is only 7.7 per cent. and this lasts but for 0.28 per cent. of the length. Over 84 per cent. of the road has a better grade than 5 per cent. The four automobiles making the inspection trip had no difficulty whatsoever in making the pulls or the turns.

"That the surface of the road is good, is borne out by the fact that a motor car made the eighteen-mile run from Le Ping to Pingtingchow in forty minutes and the six-mile trip from Pingtingchow



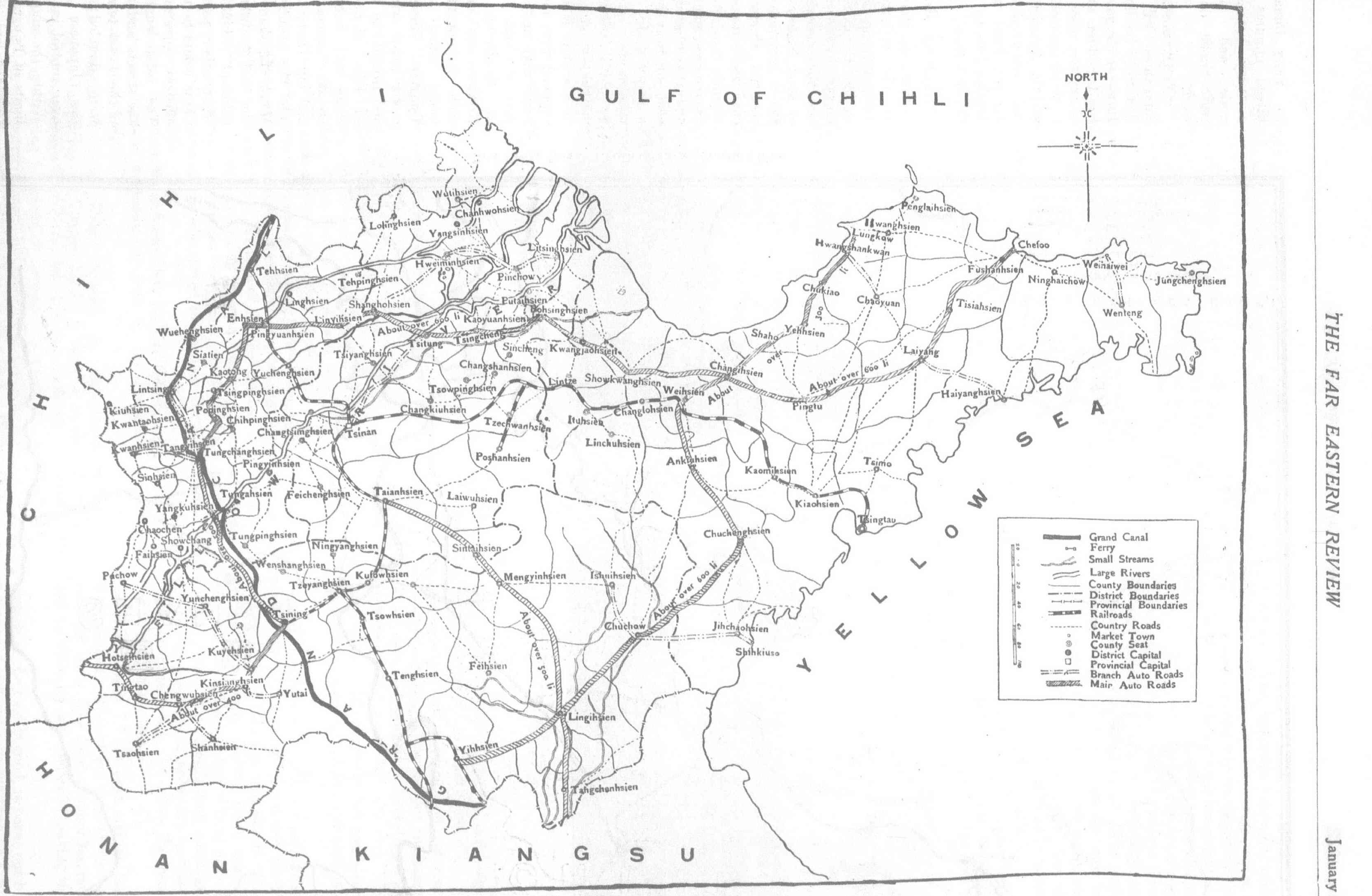
Red Cross Roads Constructed in North China

to Yang Chuan in fifteen minutes with a very bothersome mule and donkey pack traffic on the road.

"Transportation companies will undoubtedly be formed. However, the governor has forbidden the use of any but wide tired carts on the new road and the American red cross has been teaching the local wheelwrights how to make the best type."

Shantung Roads

Excepting the roads in the vicinity of Tsingtao commenced by the Germans and finished by the Japanese, the construction of good highways in this province is confined almost exclusively to those recently completed by the red cross engineers, and the Chefoo-Weihsien highway by the ministry of communications. It may be said that Tsingtao and the leased territory of Kiaochow is better supplied with modern roads than any other part of China. Only in Hongkong and Kowloon can one get such enjoyment in motor riding as in Tsingtao. These fine motor roads wind in and around the wooded hills, along the shore and batteries, by old German forts and out thirty miles into the country to Mount Laoshan or to the waterworks, a constant reminder of what other parts of China would be under efficient government. The total length of the streets and roads in the leased territory were doubled since the Japanese took over control in 1914. Within the municipal limits of Tsingtao the Germans laid 65,300 metres of macadam



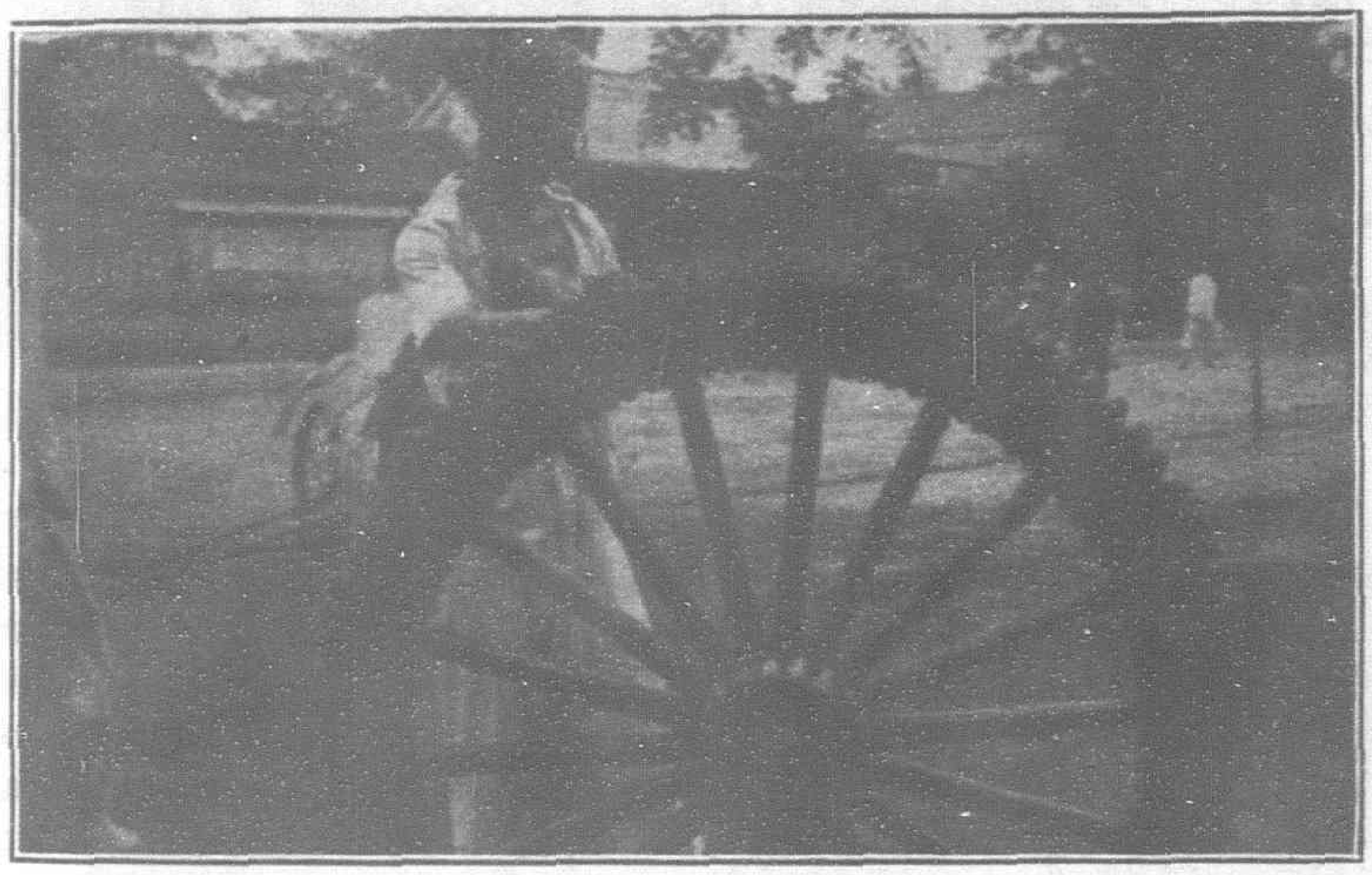
Map reproduced by courtesy of "The China Press," Shanghai.

Map Showing Contemplated Road Improvements in Shantung as Approved Last Year by the Provincial Government. Some of these roads were Subsequently Constructed by the Red Cross Engineers

and 3,400 metres of asphalt roads. To this the Japanese have added 27,290 metres of macadam and 13,300 metres of asphalt streets, while outside in the city in the leased territory the Japanese added 17,390 metres to the 27,290 metres of macadam roads completed by the Germans. In July last the Japanese authorities entered into a further contract for the extension of municipal macadamized streets in Tsingtao in the new industrial section, totaling approximately four miles.

The excellent work of the American red cross in building roads in this province has been described so often during the past year that repitition seems unnecessary. Sufficient to say that 485 miles of mud roads were built at a cost of $834,000 Mex., an average of $1,719 per mile. These roads are merely graded dirt, rolled or tamped firm. Macadamizing was out of the question because of the excessive cost of furnishing crushed stone. The scarcity of stone in these vast stretches of alluvial plain compelled the German engineers when building the northern section of the Tientsin-Pukow railway (which passes through the same districts as the main red cross roads) to erect great kilns to make brick from the excellent clay, which was afterwards broken to furnish ballast for the road bed. Mr. J. E. Baker, in charge of the red cross road-making operations, commenting on this, says:

"The standard width of these highways is 20-ft. If a centre crown 14-ft. wide were made of macadam 8-in. thick before rolling (which would mean about 6-in. thick after rolling), each lineal foot of highway would contain 9-13 cubic feet and a mile would require 49,280 cubic feet. At 100 pounds per cubic foot, each mile of macadam would amount to roughly 2,500 tons, or five train-loads or at the rate of seven trains per day for a year. In other words, the entire freight service of the Tientsin-Pukow line over the section in Shantung would be required for one year in order to macadamize the red cross roads.



A Chinese Road Devil

The saw tooth wheel of a swagger Peking Cart, the "bete noir" of the modern road maker

"Calculate the problem in a slightly different way. The rail haul upon this rock from the nearest source of supply to the railway stations from which it could be distributed would average 150 kilometres, and at the extremely low rate of four miles per ton kilometre, the freight would amount to 60 cents per ton, or $1,500 per mile. The mere railroad freight upon this rock would amount to $750,000 or not far short of the entire amount spent by the red cross on highway construction. But remember that this rock would then only be at the railroad and it would have to be carted an average distance of 300 *li* on either side of the railway. Assuming an average rate of 6 cents per ton per *li* for carting the rock from the railroad to the point where it is needed, and we arrive at the tremendous figure of $45,000 per mile for carting the rock to the point where it is to be put into place. There is no need of considering the cost of the rock or of putting it in place. Already the figure is over $22,500,000 for transporting the macadam for these 500 miles of highway. Perhaps as the macadamizing progressed, unit costs could be reduced, but only one-fourth of the area of Shantung would then be served by a mere skeleton of trunk lines. Ultimately, this is by no means an impossible task, but under the present financial condition, not only of the Chinese government, but of the Chinese people, such an expense is not to be contemplated. The situation in Shantung is typical of the situation in Chihli and of the whole coastal plain of China measuring several hundred miles broad and several more hundreds of miles long. If in this generation there are to be roads in China which will actually connect up provinces and serve the whole territory from Peking to Canton, some other factors must be brought into the question."

It is of supreme importance that manufacturers of road-making machinery keep Mr. Baker's statement always before them in estimating the possibility of finding a market for their products in eastern China. The character of the country compels the adoption of the rolled mud road, except in such short stretches in proximity to river beds where gravel may be obtained, or hills from which suitable stone may be quarried.

Over the Wuting-Yucheng section of the new red cross road in Shantung a company with $500,000 capital is being organized by Mr. Liu Ying-chang to operate a motor bus service: the distance is about fifty miles, while from Yuchen to Tungchangfu (fifty miles) another company capitalized for the same amount is being promoted by Mr. Pao Lien-shui. Both of these schemes have received the approval of the ministry of agriculture and commerce. Still another application has been made by Mr. Moh Fan-dong for permission to operate a motor bus service over the new road between Tsinanfu and Laokow. He has organized his company with $20,000 capital.

In addition to the Chefoo-Weihsien road constructed by the ministry of communications, a special bureau has been established at Chefoo for the construction of roads from the port to Weihaiwei, Laoyang and Haiyang respectively, a total of about 130 miles. This scheme has been formulated by the commissioner of customs at Chefoo and it is said that an appropriation of $240,000 will be made from the salt gabelle surplus for their construction. These three roads will complete the opening up of the rich hinterland behind Chefoo and bring greater prosperity to that port.

In the southern part of the province of Shantung a motor service was established on June 10 between Tsaochwang and Ichow a distance of about 50 miles. In the Kiaochow district the Koo-Tung Automobile Company has been organized in Tsingtao to build a road and operate an auto bus service between Lantsun and Tingtu.

Manchuria

Reference to the service bulletins of THE FAR EASTERN REVIEW for the past six months will give the reader a comprehensive idea about new roads and automobile companies in China. From Heilungkiang on the north to Canton and Yunnan on the south, from Shanghai on the east to Chengtu on the west, we hear of new roads, and streets being built and automobile and autobus companies organized. In the larger centres autobus companies have been active for a long time and each week brings news of new extensions. In the winter, the frozen plains and roads of Northern Manchuria permit of rapid traveling between Harbin and Tsitsihar and the towns on the Amur. In Harbin, the Russo-Asiatic Bank operates a motor-truck service for the handling of freight on the C.E. Railway and the streets of Dalny provide evidence in the shape of immense trucks employed by the S.M. Railway for the transport of bean cake and other commodities between the mills and the docks and warehouses. The road between Dairen and Port Arthur is being pushed through. Automobile companies are being organized for Antung and the Yalu valley.

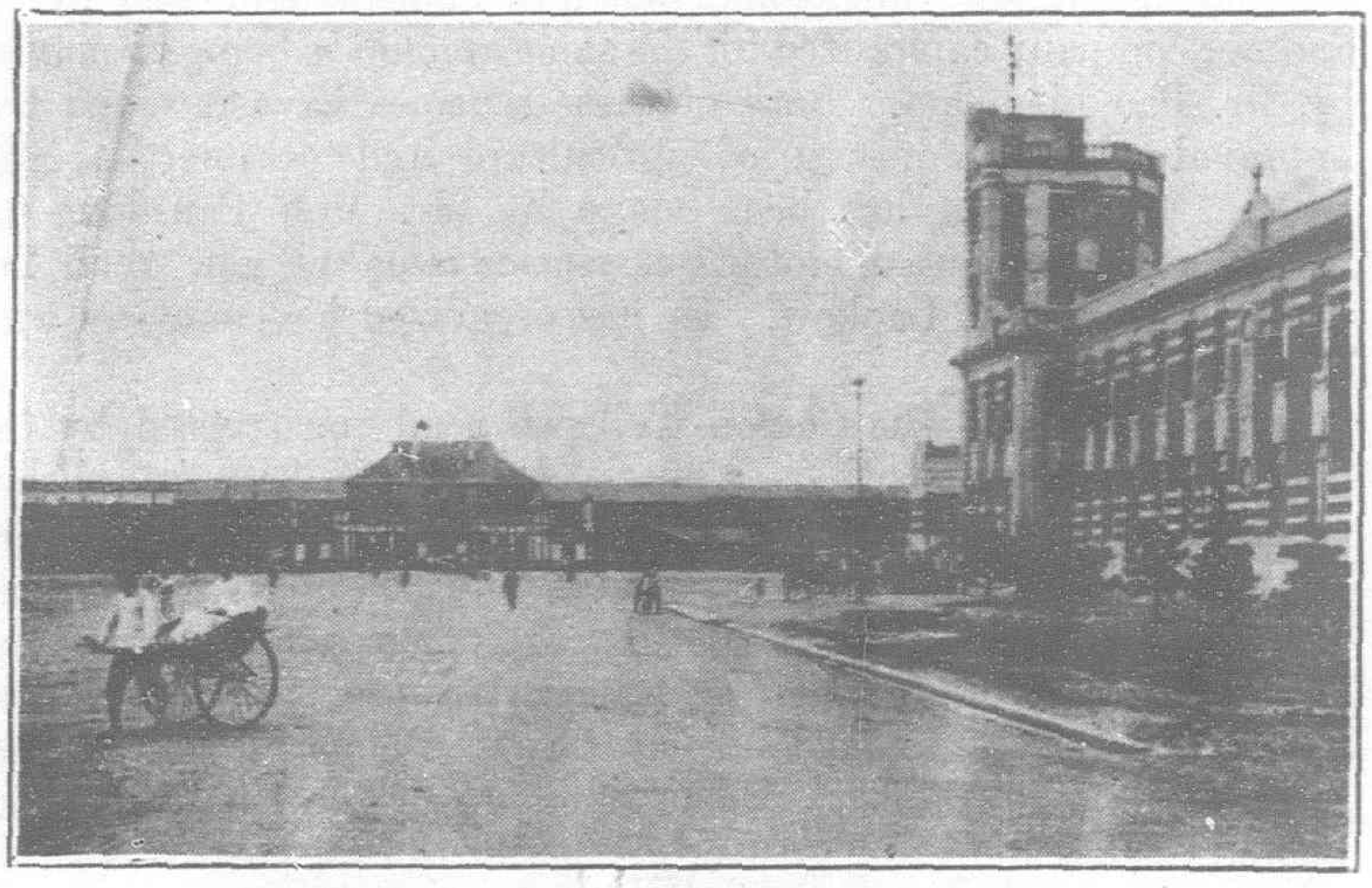
The Antung District.—In Antung a Dutch engineer has been engaged to carry out the surveys for new city roads extending into the nearby country and an automobile company with $25,000 capital is being organized by Mr. Yang Ying-chong. Another enterprise called the Antung-Taikooshan Automobile Transportation Company has applied for permission to operate a service.

Native Roads Described

A general report on the roads of the Antung district was made last year by American Vice-Consul C. J. Spiker, which is typical of the other parts of North China. He says:

With the exception of the streets of Antung and of a few other cities, there are no highways worthy of the name in the Antung district, and no official or private projects for road construction, repair or maintenance, outside of the Japanese settlement in Antung. The roads in the rural sections are nothing but rocky trails or stream beds, passable only by the primitive, but exceedingly strong, native carts and pack animals. Passage of most of these roads by a four-wheeled vehicle would be an impossibility. Bridges are practically non-existent, the smaller streams being crossed by Fords, and the larger ones by means of crude ferries.

The roads are at their best during the winter months when the ground is frozen. After the spring thaw and during the rainy summer months the roads along the plains frequently become impassable quagmires or canals, in which four and five horse teams are frequently bogged and only extricated with great difficulty. In the winter months much of the cart and pack-train traffic is diverted to the broad stretches of the frozen Yalu and other rivers and streams of the district. The rivers can generally be used for cart traffic from the middle of December to the middle of February.


Streets in the Japanese Concession at Antung

Provisions for Maintenance of Roads

In very rare instances when, through flood or other cause, traffic becomes absolutely impossible over a stretch of country, the local officials levy a tax on the inhabitants of the locality in order to restore communication, but such action is resorted to only in extreme cases. As a general practice the roads in this district are maintained by the merchant guilds of the various localities, these guilds collecting subscriptions, disbursing the funds, and supervising the work, without any action whatever on the part of the local officials. The maintenance of the few bridges existent is usually provided for by the guilds that supervise the roads. These crude bridges are generally of very unstable construction, requiring the constant attention of caretakers, who generally exact a toll from those using the bridges. There is no government direction of construction and maintenance.

There is ordinarily no tax levied on abutting lands, the only tax money utilized for road construction being that levied by local officials in the rare emergencies referred to above. In the supervision of the roads under their "jurisdiction" the merchants' guilds assess guild members a small amount for road repairs, and also solicit subscriptions from the farmers and other members of the local community. There is no uniform method observed in the levying of such assessments and subscriptions, although in a general way it may be stated that the amount of subscription is based on the property holdings of the individual. Farmers frequently donate their labor in lieu of a cash subscription.

Cost of Hauling Freight

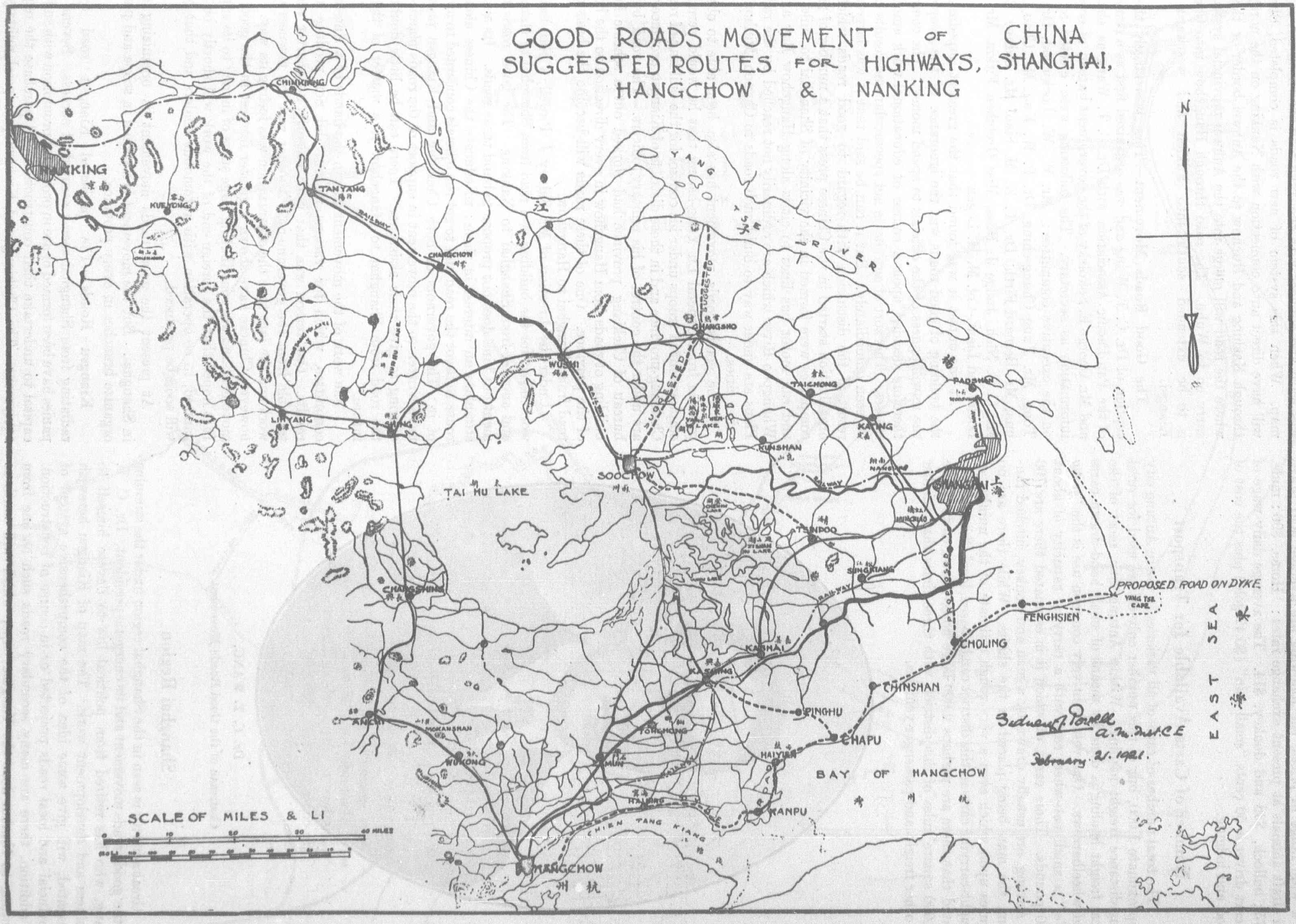
There is no fixed scale of charges for freighting between any two points, the price being a matter to be settled by bargaining on each occasion and depending upon the available supply of carts, the condition of the roads, the weather, political condition of the country to be traversed, character of freight to be carried, etc. Light, bulky freight, such as silk cocoons, pays an appreciably higher rate than heavy, compact freight, such as beans, kerosene, piece goods, and flour, the determining basis of charges apparently being the bulk earning capacity of the cart for "heavy" as opposed to "light" freight.

The average charge per day for the service of a 2-horse cart in hauling freight in the Antung district is $4.68 United States currency; the maximum load is 1,066 pounds, and the average day's journey is 40 miles. The charge for a 3-horse cart is $5,61, the maximum load is 1,600 pounds, and the average journey is 30 miles. The services of a 4-horse cart for one day cost $7.01, and the maximum load is 2,133 pounds, over an average distance of 30 miles. For a 5-horse cart the rate is about $9.35, the maximum load 2,666 pounds, and the average day's journey 30 miles. The cost per ton-mile in each instance is from $0.24½ to $0.26. These charges are based on rates quoted by firms engaged in overland freighting. The average haul is computed on a daily basis. But when the roads to be traversed are above average and the route lies through a region free from robber bands a flat rate for the trip is sometimes made. It is to be particularly noted that the above prices are calculated at the present rate of exchange, i.e., $1 gold equals local small coin $1.068, or at the rate of $1 gold for $0.93 Mexican.

A Street in Antung

Cost of Carts, Draft Animals, Etc.

There are no motor vehicles whatever used in freight transportation in this district and there are only three passenger automobiles in Antung. All overland hauling is done by means of the native carts, or by pack train. The carts, which are without springs or covering, are very strongly made, and seem admirably adapted to withstand the exceedingly rough usage to which vehicles are subjected. A large cart costs the equivalent of $140 gold. Teams consisting of two to seven draft animals are used to draw freight carts, the number of animals varying with the load carried. The team in most common use consists of four or five animals, horses, mules, donkeys and bullocks being used for this purpose. A team in which a mule, a donkey, a bullock and two horses are hitched to the same cart is a common sight in this region. Although there



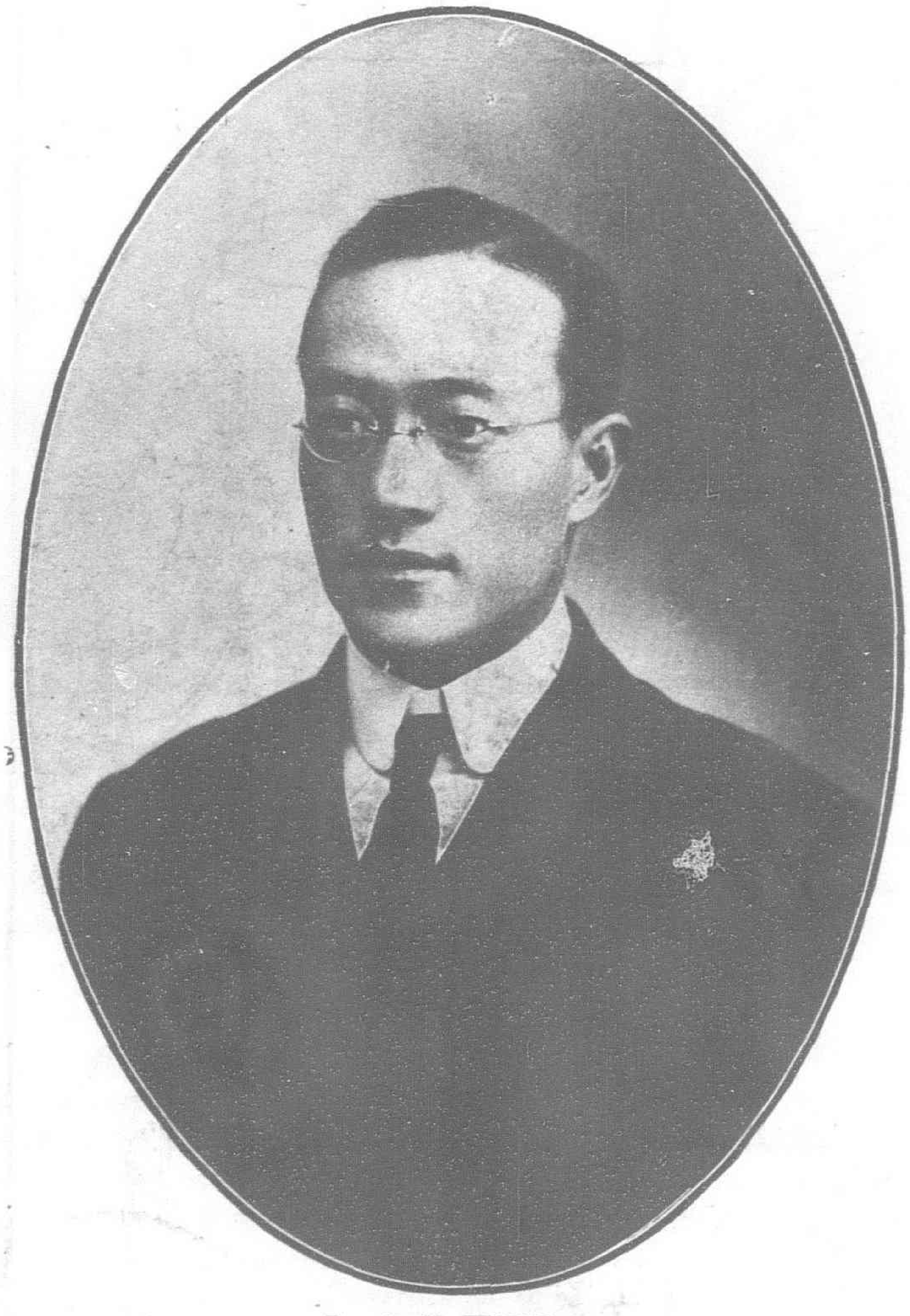
GOOD ROADS MOVEMENT OF CHINA
SUGGESTED ROUTES FOR HIGHWAYS, SHANGHAI, HANGCHOW & NANKING

Sidney J. Powell A.M. Inst. C.E.
February 21. 1921.

is a wide range in prices, the following are average gold prices for draft animals at present exchange rates: Horse, $90; mule, $75; bullock, $38 and donkey, $14. The average daily wage of a cart driver is 50 cents "small coin" ($0.47 gold) plus the cost of food and lodging.

Number of Carts Available for Transport

The total number of carts of all varieties in use in Antung city approximate 1,000, but of this number only 50 are used for rural long-distance freight hauling. Within Antung city, most of the local freight hauling is done by means of small hand-drawn carts and wheelbarrows. One vehicle in very common use is the *"p'ing ch'e,"* a small two-wheel cart with a carrying capacity of about 800 pounds. These carts, of which it is estimated there are 700 in Antung, are usually drawn by a man and donkey, hitched tandem, the man being placed in the shafts. While there are no figures upon which even a very rough estimate of the number of freight-carrying carts in this district can be based, local Chinese have stated that there are perhaps 2,000 large horse-drawn carts in the 18,000 square miles of this district, with three times that number of other freight and passenger vehicles.



Dr. C. T. WANG,

Chairman of the Good Roads Movement

Shanghai Region

Great activity is seen in the Shanghai region under the stimulus of the goods roads movement and its energetic president, Dr. C. T. Wang, who has retired from political life to devote himself to business and development work. The map of Kiangsu herewith presented, will give some idea of the comprehensive system of provincial and local roads projected or in course of construction. In addition, there are many secondary roads such as one from Pootung to Nanhui near the Yangtze cape, which will continue westward and connect with the dyke road shown on Mr. Powell's map. When this system of new roads is completed, Shanghai will have direct auto connection with Nanking on the north, and through Kashing and Huchow to the Anhwei border or the west where the road will merge into the Anhwei provincial system and carry on to Wuhu. The road through Hangchow into Chekiang is to be extended south into Fukien and westwards into Kiangsi.

The Good Roads Movement.—This was largely the conception of Dr. C. T. Wang and was organized first as a committee of the Pan-Pacific Association with Dr. C. T. Wang as chairman and Mr. George E. Sokolsky of the government bureau of economic information as secretary. The following were elected to serve on the executive committee: Mr. W. W. Lockwood, Dr. F. C. Tong, Mr. Yung Chung-ching, Dr. P. W. Kuo, Mr. Chao Ching-hua, Mr. Bernard Firth, Dr. T. K. M. Siao, Mr. Sidney Powell, Mr. C. C. Nieh, Judge J. Ross, Miss Gretchen Fitkin, Mr. Allen Loehr and Lieut.-Col. M. H. Logan.

At the outset it was found that the greatest impediment to the building of good roads was the ignorance of the people and the unwillingness of the officials to spend money. The committee therefore decided upon a course of educational work among the masses. This sort of activity is not spectacular and results cannot be seen immediately. But it can be said that it was largely as a result of the discussion with regard to good roads which this organization started in the Chinese press that a number of private companies were formed in the vicinity of Shanghai to build roads and run motor bus lines to cities along Hangchow Bay and the Whangpoo River which are ordinarily not reached by the railroad. Plans are under way to build such roads to Chapoo, Minhong and other cities.

The goods roads movement has also been able to obtain a promise from General Lu Yung-hsiang that he would permit the employment of troops under his control for the building of roads in Chekiang province and in those districts of Kiangsu province which are under the control of his military officers. The road building bureau of Chekiang province had worked out a scheme for the building of roads from Hangchow in every direction to the borders of the province. One of these roads will become the basis of the road from Shanghai to Hangchow.

Under the direction of Mr. Sidney J. Powell, a plan has been worked out for the building of a road from Shanghai to Hangchow and another from Shanghai to Nanking. The good roads movement of China does not propose to build these roads. Its aim is to stimulate an interest in them; to educate the Chinese along the route to favor the road and to get the officials concerned to approve of it. The governors of both Chekiang and Kiangsu provinces have written to the movement in support of the roads planned and offering to give their assistance. There can be little doubt that the road from Shanghai to Hangchow is a matter of the near future.

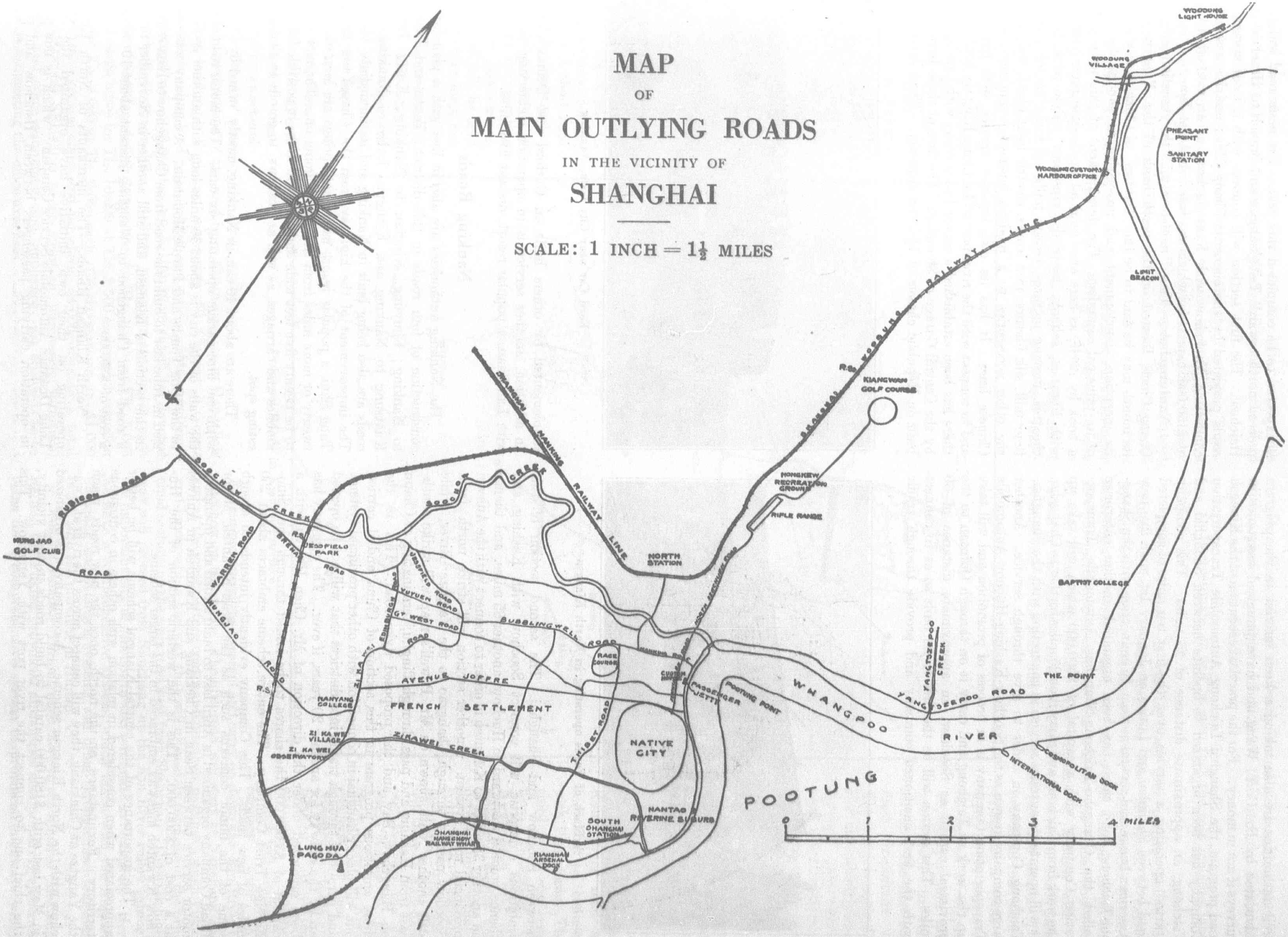
The work of the movement was in the hands of a sino-foreign committee, which for various reasons did not produce visible results. One reason was that until recently no charter was obtainable from the government. Another was the newness of the work and the fact that the organization was feeling its way. Now, however, Chinese have shown a greater interest in the good roads movement and are contributing large sums of money to its support. It is hoped that the foreign end of the work will shortly be re-organized, in co-operation with automobile dealers and that results will soon be produced.

At present the good roads movement is organizing solely in Shanghai. But the movement is national in scope and plans to organize branches in every province.

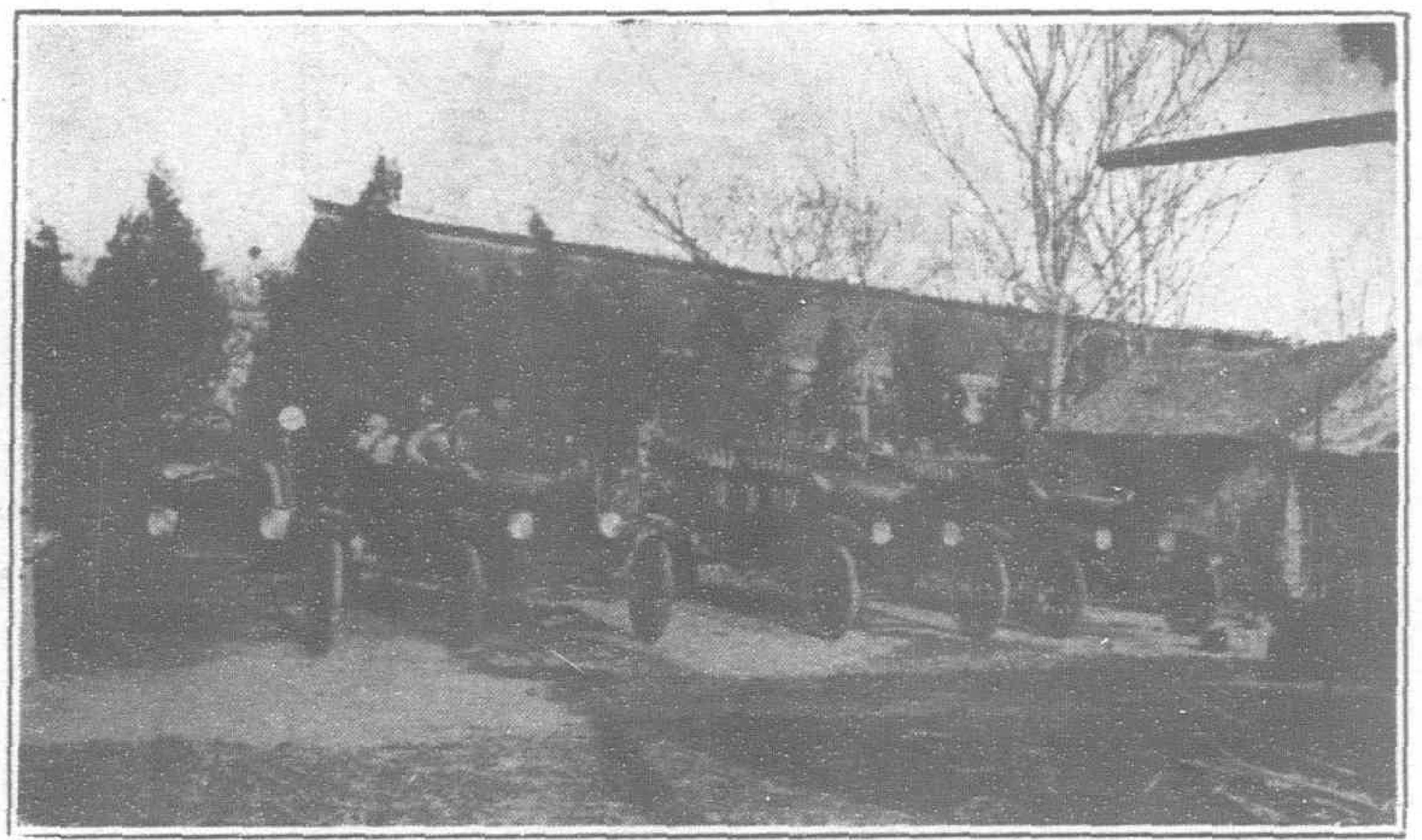
Kiangsu Roads.—The projected Kiangsu road system radiating from Shanghai seems assured of success. Several companies have been formed or are in process of promotion with sufficient capital to undertake their construction and purchase the required equipment. The Chekiang and Kiangsu provincial military and

MAP
OF
MAIN OUTLYING ROADS
IN THE VICINITY OF
SHANGHAI

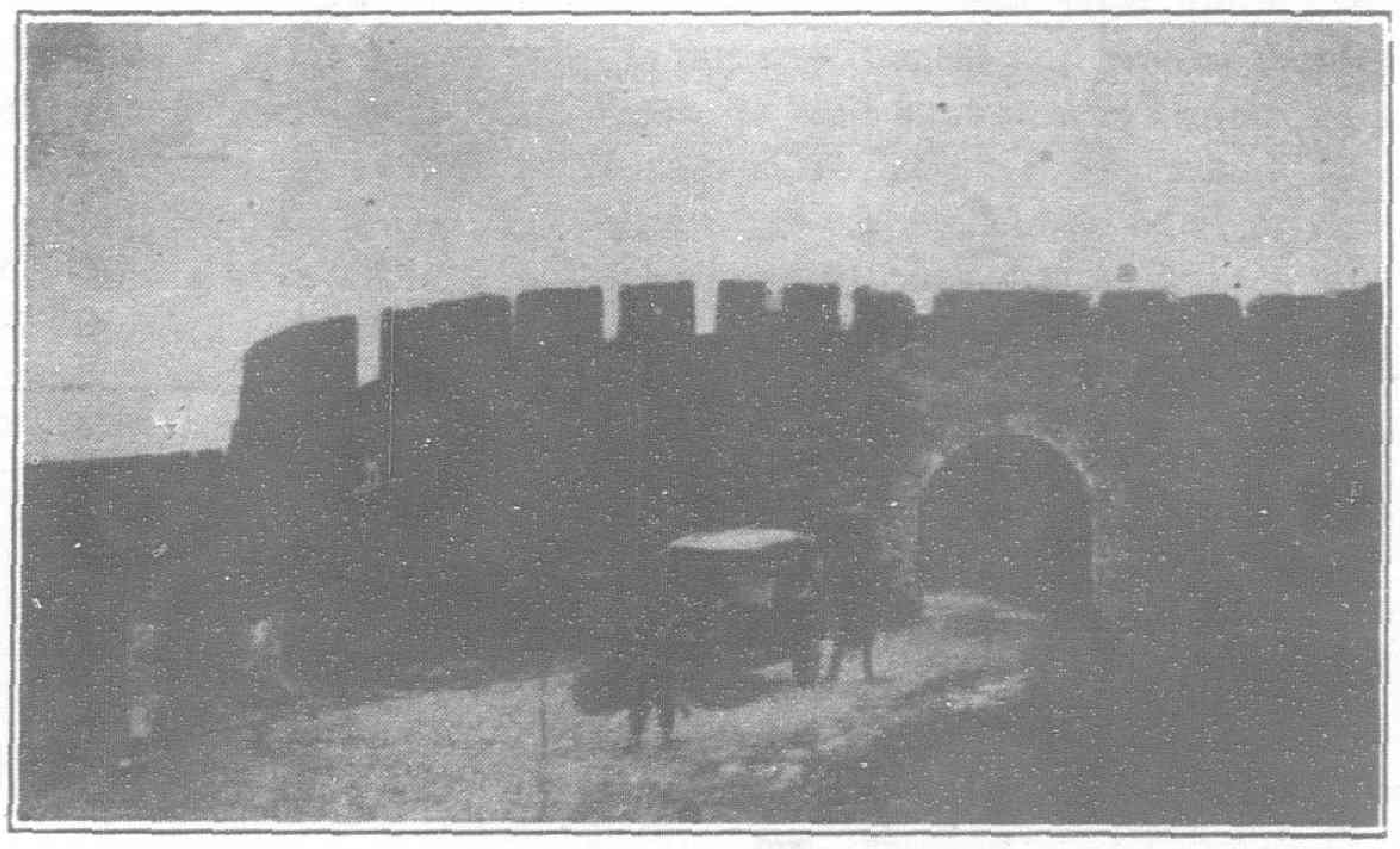
SCALE: 1 INCH = 1½ MILES



civil authorities are also taking a keen interest in the program advocated by Dr. C. T. Wang and have promised assistance in surveys if not in money. For the practical execution of the Kiangsu road program, the Shanghai-Taichong Automobile Transportation Company has been organized to operate between Shanghai and Taichong, an approximate distance of 25 miles. This company started operating a service over the first ten miles of completed road between Shanghai and Lutien on January 1st, with five new American busses and several autos. In connection with the Shanghai-Taichong road there has been organized another enterprise called the Changsho-Taichong-Shanghai Automobile Transportation Company with a capital of $500,000 which will take up the work from Taichong and carry it on 25 miles further to Changsho. It will operate its autobus service in connection with the Shanghai-Taichong Company in order to give through service. Another large company known as the Soochow-Kashing-Huchow Automobile Transportation Company is in process of promotion and will take up the work at Taichong and carry it on through Quinsan to the provincial capital at Soochow, an approximate distance of 30 miles. This section will be the first to be built so as to connect with the first mentioned company and provide through traffic between Soochow and Shanghai. The second section of this ambitious enterprise will connect Soochow with Kashing and thence proceed westward to Huchow, another 85 miles, and thence on another 35 miles to Kwanteh in order to connect with the Anhwei provincial road system. Another section will strike north from Soochow passing through Changzao to the Yangtze River, while still another route shown on Mr. Powell's map will strike southeast from Kashing and pass through Pinghu, terminating at Chapu on Hangchow Bay and the proposed dyke road. This is the most ambitious program in this section of China and if carried out will place Shanghai in connection with other provincial systems and permit of through traffic into districts that will not be opened up by the railway for another 20 years, if ever. The company has been organized under the direction of Mr. Chen Hui-yu with a capital of $3,000,000 the shares to be issued through the Sino-Foreign Trust Company. The entire scheme embraces about 250 miles of new roads. This Company evidently intends to absorb some of the minor concerns such as the Sean-Kwanteh Motor Road Company organized in April last to build a road and operate a motor service between Sean in Chekiang and Kwanteh in Anhwei at a cost of $300,000. This is the western section of the Huchow-Kwanteh highway embraced in the larger scheme.



A Flock of Fords operating in North Kiangsu



Ford Car near City Gate, Nanking

The importance of the central Kiangsu scheme will be better appreciated when considered in relation with others in contiguous territory. For instance, on the north, once the new roads reach the Yangtze at Chinkiang, they will connect across the river at Kwachow with the North Kiangsu scheme. A company was organized in May last with $180,000 capital to build roads in that vicinity, the chief one to connect the river port with Yangchow. This is expected to be completed this year. The main road will then proceed north towards Tsingkiangpu and branch to Hsuchow and Haichow. The first section will connect with a local system of roads projected by the energetic Chang Chien and his associates connecting Yangchow with Nantungchow, at an estimated cost of $150,000, capital for which was subscribed last June.

Nantungchow.—This "model city," the creation of Mr. Chang Chien, located on the north bank of the Yangtze near its mouth may be said to be the "Dayton" of China, a city owing its inception, development and prosperity to the public spirit of its principal capitalist. The development of this town merits a book by itself, as here are found all up-do-date improvements, with libraries, schools, hospitals, museums, public park, prison, theatres, moving pictures, cotton mills, oil mills, match factory, flour mill, silk filature, iron works, electric light plant, banks and the other accessories to a modern business community, all on Chinese lines. It has its own steamer service with Shanghai, and to connect with the river port at Lu Ching King six miles away, there has been established a motor bus service, with cars supplied by the Central Garage of Shanghai. The first of these buses were built on Republic chassis of 1½-2-ton capacity. These have been supplemented by others built on Garford and Dennis chassis. In addition, another service is in operation connecting the city with Lan Shan, a popular resort, distant five miles.

Nanking Roads

The Nanking authorities are also in line with a plan for the construction of four roads in this district: Tantu and Tanyang to Nanking; Chuyung, Kingtan to Nanking; Kusui, Liyang, Kuatsung to Nanking and Kiangpu, Luho to Nanking. New roads are also being built in Nanking and its immediate vicinity. The improvement of the highway from the Chao-Yang gate to Tang Shui, a popular resort where hot springs are located, about twenty or more miles from the city, is going on. The new road is to be twenty-five feet wide and that will make it possible for automobiles and carriages, as well as ricshaws, to go out to that interesting spot.

There are about 40 cars in Nanking, mostly owned by Chinese, with one hire garage operating six cars. The motor road around the walls of the city is about 30 miles long with another good road to the Ming Tombs and Purple Mountain. A company was organized in June last to build the road from Changchow to Hsiaowutseng in this section of Kiangsu, and still another in November to build a road from Changchoo to Wangling distant about 10 miles, at a cost of $30,000.

North Kiangsu Roads.—The merchants of North Kiangsu operating on their own initiative have organized the North Long Distance Automobile Service Company, which is now partly in operation carrying passengers between Hsuchow and points eastward towards Susien on the Grand Canal. This company has purchased several machines from the Shanghai agent of the Ford company.

There is also the Lee Hua Company and the Yue Kong Transportation Company organized at Hsuchow each with $100,000 capital now operating in Northern Kiangsu and another company promoted recently to build a road in Northern Anhwei to connect Pengpu on the Tientsin-Pukow Railway with the town of Hweiyuan.

Chekiang Roads.—To the south of Shanghai, the Kiangsu system will connect with the roads building or projected by the Chekiang provincial roads bureau.

We have no complete data as to the entire road program of this province, but there are several important roads now under consideration, notably one running west from the provincial capital at Hangchow towards Yuhang, the first section of an inter-provincial road to Hweichow in Anhwei mentioned above. Another important road in Chekiang to be constructed by the provincial authorities will start in the Sin Chong Kwan Mountains and follow down the Yen Ki Valley through Chen Hsien to Shangyu, a distance of 170 miles, and is estimated to cost $1,000,000. An automobile company is to be organized to operate a service along this line. A short road is to be constructed from Ningpo south to Fenghua for operating a motor bus service. This road will be only twelve miles long, but will prove a highly profitable investment, while still another automobile road will connect Ningpo with Chinhai and Szechee.

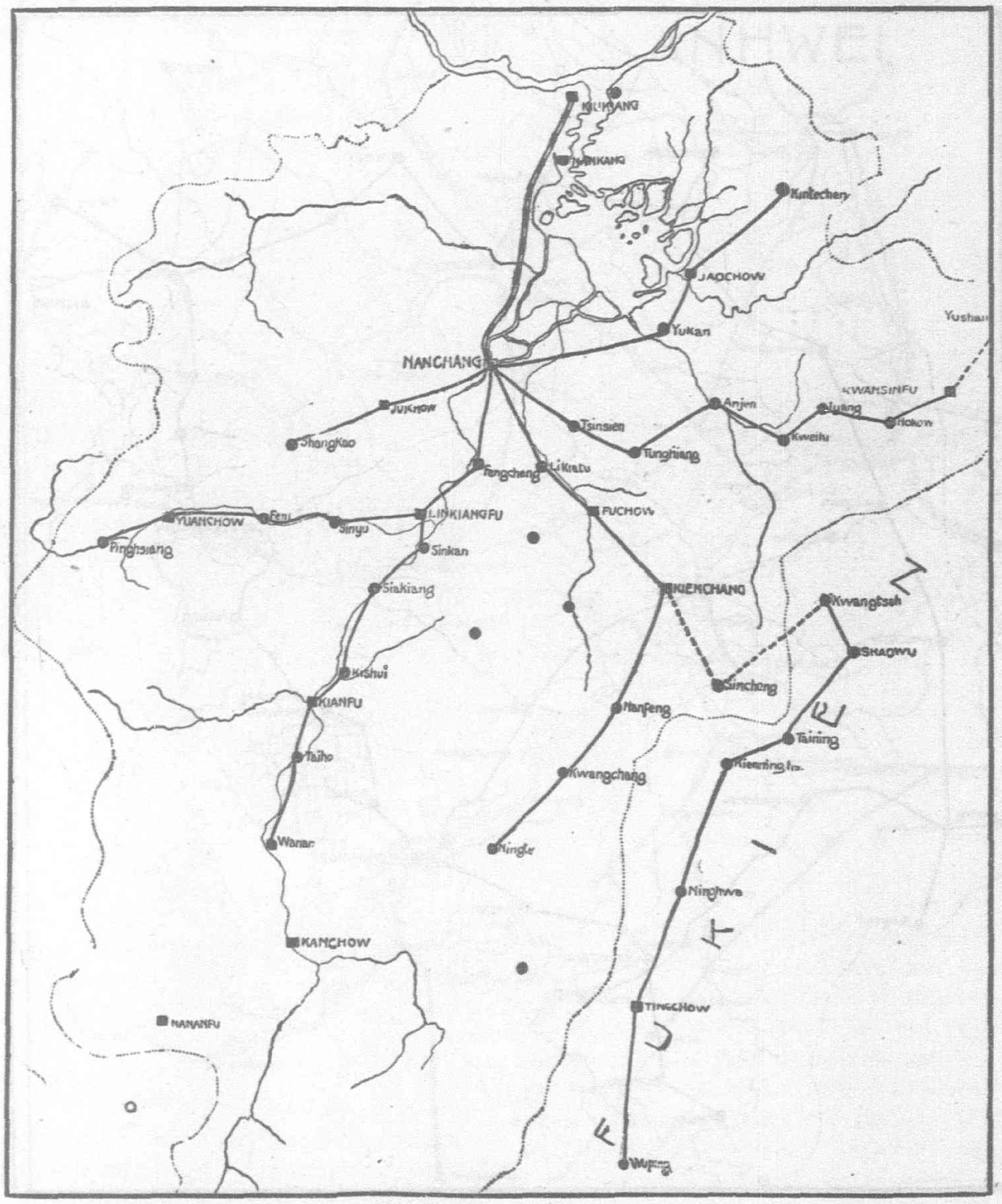
The estimates of the Hangchow-Yuhang Motor Road and Transportation Company will give a general idea of the cost attached to these roads.

(1) Construction of the road from Kwan-ying-jao in Hangchow to Shan-tao-lung, Yuehong, measuring 50 Chinese *li*; costs $195,000 including land price, bridges and sluices, pebbles and lime, an average cost of $3,900 for one *li*; (2) $75,600 will be devoted to purchase of automobiles: 8 3-ton passenger auto-buses each capable of accommodating 24 persons, for Tls. 40,000 at Tls. 5,000 each, 4 cargo buses for Tls. 10,000 at Tls. 2,500 each and 2 common buses for Tls. 4,000 at Tls. 2,000 each; (3) six stations at $1,000 each $6,000, general office and car sheds, $4,000, making a total of $10,000; (4) $10,000 is to be spent in purchasing furniture, fixtures and office equipment and appliance; (5) $9,400 is to be set aside for meeting the office expenses.

It is estimated that the yearly income will be about $144,000 with a yearly expenditure of $129,980 (this includes dividends), leaving a surplus of $14,020.

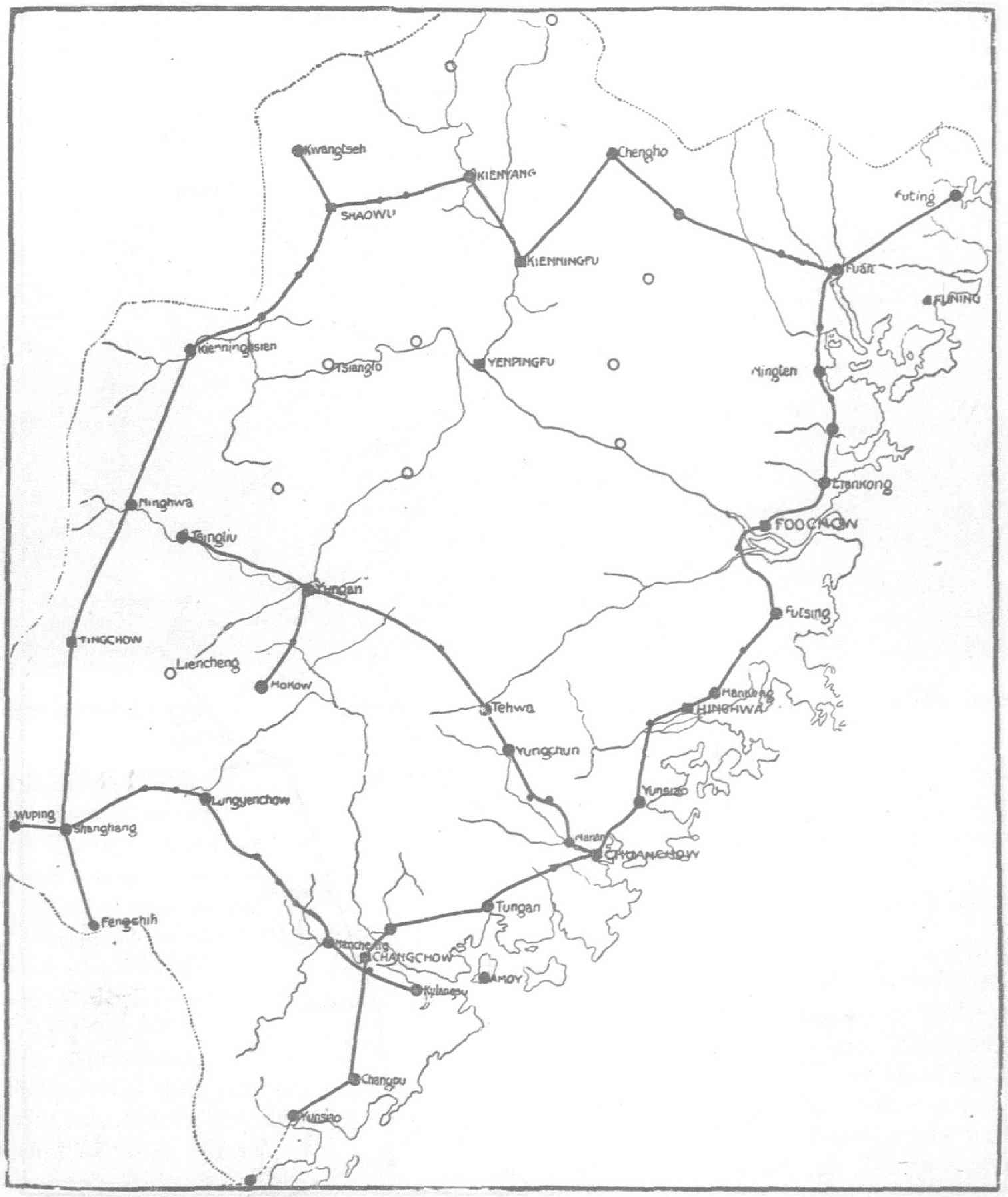
In this estimate, it will be seen that the cost includes land, bridges, etc.

Kiangsi Roads.—It will be some time perhaps before the Kiangsu highway system radiating from Shanghai, is carried through into Chekiang and Anhwei to the Kiangsi border, but once this connection is established, we link up with another comprehensive provincial system which carries us on towards Hunan and south to the Kwangtung border. The province of Kiangsi with its capital at Nanchang is the strategical key to the rest of South China commanding all the lines and routes to the east and south. The provincial road scheme embraces a total of 1,200 miles, estimated to cost an average of $3,000 per mile and five years to construct. The first and most important of these roads is naturally the one which passes through the richest agricultural and mining districts in the Kan River Valley. This road will link Nanchang with Kanchow passing through the important towns of Fencheng, Linkiang, Sinkan, Siakiang, Kianfu, Taiho and Wanan. The second line will branch off the Kan River road at Linkiang to connect with Pinghsiang. The third will run east from Nanchang to Kwangsinfu near the Chekiang border and here link up eventually with the Chekiang highways. The fourth will start at Nanchang and run up the Fu River Valley to Fuchow, thence to Kienchangfu and then to Ningtu in southeastern Kiangsi. At Kienchangfu, another branch will ultimately connect with the Fukien provincial road system and carry on down the Min River to Foochow on the coast. The fifth road will start at Nanchang and end at the great pottery centre at Kintechen, passing through Yukan and Jaochowfu, a highway that will ultimately form one of the principal sections on the main road west from Shanghai. The sixth highway will proceed from Nanchang up the Kin River valley through the important city of Juichowfu and terminate at Shangkao. Here we have a comprehensive system, which taken with the Anhwei, Chekiang and Kiangsu systems will bring through road transportation into the province of Hunan.



Proposed Roads in Kiangsi Province

Fukien Roads.—Turning once more to the south of Chekiang, we find the Fukien provincial authorities also preparing elaborate plans for a comprehensive system of provincial highways which embraces five main roads. The first of these, called the Fukien eastern or coast road is an important engineering project, necessitating many long and expensive bridges across the lower reaches of the rivers which abound in this province. Starting in the northeast corner of the province at Futing this road will pass through Fuan, Ningteh, Loyuan, Lienkong, thence to the provincial capital at Foochow and then southwards along the coast through Futsing, Hinghwafu, Hweian, Tungan, Changtai and Changchowfu terminating in the southeast corner at Yunsiao, a total distance of about 350 miles. The Fukien western road will commence at Fengshi and pass through Shanghang, Tingchow, Ningwa, Kienninghsien, Taining, Shaowufu and end at Kwangtseh on the Kiangsi border. Here it will ultimately connect with the Fu Valley road of the Kiangsi system. The length of this road is about 180 miles. The Fukien central road will start at Nanan on the coast road and pass through Tehhua, Yungan, Tsingliu and end at Hokow, a distance of about 140 miles. The Fukien southern road will start at Haiteng passing through Nantsing, Lungyen and Shang-hang, terminating at Wuping, a distance of 140 miles. The Fukien northern road will start at Fuan on the coast road and proceed west through Chengho, to Kienningfu, thence to Kienyangfu and terminate at Shaowufu, a distance of about 180 miles. Here we have a provincial system aggregating 1,000 miles of main highways estimated to cost about $10,800 (Mexican) per mile or a total of $10,800,000, a task well within the financial limits of the provincial capitalists. The Fukienese have already started to build macadam roads leading out from the important port of Chuanchow to Yungchun and between Huyang and Tehua for a motor bus and freight traffic, while a company was organized last June with a capital of $1,000,000 to construct the highway between Amoy and Foochow and operate a motor service. This road would be about 140 miles long.



Proposed Road Scheme for Fukien Province

In the vicinity of Foochow over 30 miles of macadam roads have been built by the Foochow road bureau, headed by Mr. Lin Ping-chan, the representative of the Chinese government on the Min River conservancy commission. The cost of these roads was $325,484 (Mexican), or an average of $10,636 per mile. A motor passenger and freight service is maintained by the Yen Fu Chuan Company, a semi-official concern in which the provincial government holds a large block of stock. This company is operating six motor cars and seven buses on three regular routes. It holds the monopoly right to build roads and operate motor bus services from the capital to Yenpingfu and from the capital to Chuanchow. The projected road to Yenping up the valley of the Min River, about 100 miles long, is undoubtedly one of the most important in all China as down this route comes the great commerce from the interior, and while such a road could not hope to compete with the cheaper river transportation, it will materially shorten distances by the saving in time. The Foochow-Chuanchow road has been made part of the provincial coast road plan, as outlined above.

Our correspondent in Fukien, describing the progress of the province, says that one remarkable advance at Foochow has been the opening of the horse road from the end of the long bridge (Wan-shou Ch'iao) to the city, and on into the heart of the city. This shows how thoroughly the old bondage to *feng shuei* is broken. The south gate was the dragon's mouth, and the white pagoda on the east and the black pagoda on the west were the dragon's horns. The ground in and about the south gate was so low that in case of a flood in the river it would be overflowed to a depth of one to five or even to ten feet.

The horse road was begun in the fourth year of the republic and was finished in the seventh. It first turned east from the head of the long bridge till it reached the outside of the suburbs, then pursued a general northerly course for about two miles, then turned west till it reached the water gate by which it entered the city.

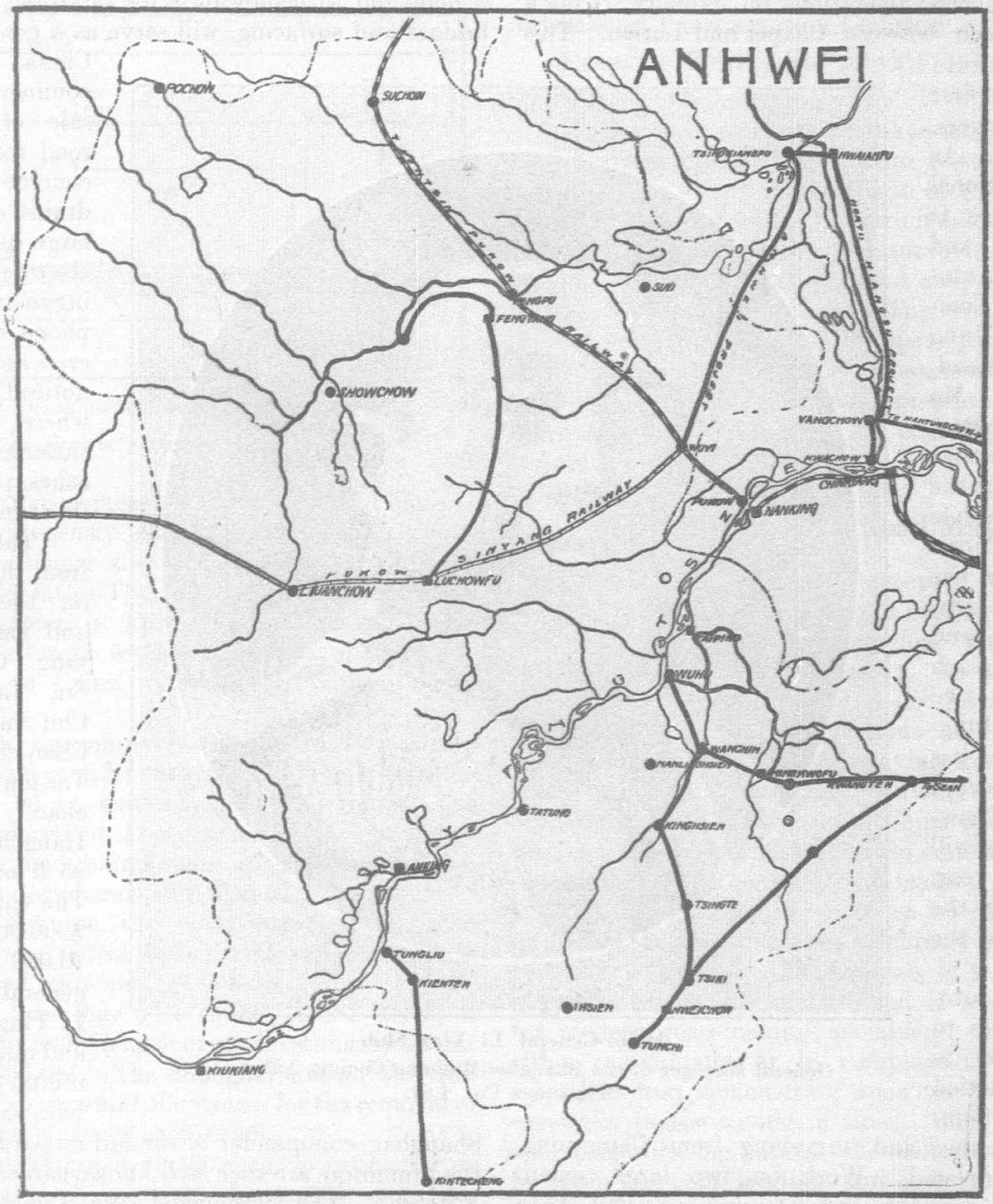
From this point it was extended into various parts of the city. It was finished in the seventh year of the republic, was soon well supplied with rickshaws, and much patronized by the well-to-do. But all foot travel between the city, the south suburbs and the foreign community went by the shorter south street; and then this also was opened to the horse road. A gap was made right through the city wall on the east side of the south gate, the low ground in and about which was filled up till the gate was closed to all travel. The shops facing on the street retracted their fronts to make a street wide enough for three autos to go abreast; and now horse carriages and autobusses dash along the once sacred south street. The rickshaws also run out through the west gate up to the Upper Bridge (Yun-shan ch'iao); and in time they will be running down the river to the anchorage.

There is talk of a highway to extend clear across the province to the head waters of the Min, and then from there over the divide into the Kiangsi province. This will come when the country is united again under one good government. The influence of the waterworks, electric lighting and widened streets is felt all through the Min Valley; and beginnings along these lines have appeared at various points in the interior. The whole province is rich in water power, now all running to waste. But the old superstitions are breaking down; and the people are ready. All now waits on capital; and capital waits for confidence in an established government acceptable to the people.

Hinghwafu.—Hinghwa is also to be made the centre of a system of country roads radiating in all directions and making connections with the sea-port and the principal cities of this region. Already certain taxes are specified for the carrying out of the project. The scheme contemplates the construction of about a hundred miles of road and if carried out will be of great value to this section.

In Yungshun, a broad street thirty feet in width was built through the chief business centre of the city requiring the pulling down of a strip of shops ten feet wide on either side of the former street. The road in Yungshun has been built on into the country until ten or fifteen miles have been completed.

Changchowfu.—In this city the Sze Shun Automobile Transportation Co. has been organized to run a service on the newly-built provincial roads and also on roads being built. Changchow will be chosen as the central station, leading to Shihma on the southeast, a distance of 35 *li*; to Tienpaohsu on the northwest to Nanchinghsien, 35 *li*, and to Nanhsu on the north then turning eastward to Changtaihsien, 30 *li*, aggregating 100 *li* in length. Transportation service from Changchow to Makowjao via Fengjenmue, a distance of 35 *li* and from Fengjenmue to Chenchee, 10 *li*, is also under contemplation.



Some Proposed Roads in Anhwei Province

Some of these roads are merely local sections of the provincial scheme. From the southern terminus of the Fukien coast road at Yunsiao another highway is now under construction that will carry it down into Kwangtung through Chaochowfu to Waichow, where it will link up with the road to Canton. Part of this road has been completed and opened to traffic.

Anhwei Roads.—The road program for this province is not so elaborate perhaps as some of the other more important sections of China, but such as it is, it will open up some of the most prosperous districts of China and in connecting with the Kiangsu system will bring communication with Shanghai and neighboring provinces. The plan as passed by the provincial assembly provides for the present of four main roads on which motor services will be operated. These roads will connect Wuhu with Tunchi, Tungliu with Kintechen in Kiangsi, Hueichow with Sean in Chekiang and Wuyi with Tsingkiangpu in Kiangsu.

The Nanyang Brothers Tobacco Company at Liufuzi in the Fenyang district will build an automobile road from Mentaitze to Liufuzi and, if the necessary funds can be raised, the road will be extended to the city of Luchow.

Hankow

Hankow probably presents the best picture of motor traffic possibilities stifled by Chinese obstruction and apathy. With only twenty-five miles of roadway, including cross streets, and of which 20 miles are located in the foreign concessions, this port has 172 licensed passenger cars, which include five motor trucks, two of which belong to the Chinese post office. In 1912 there were three cars, while in 1920, 47 cars were imported valued at $67,202. Notwithstanding the restricted mileage of streets the use of cars is becoming more and more extended, but no great development can be expected until further road additions are made. Across the river is located the large city of Wuchang, the capital of the Liang Hu, or the two great provinces of Hupeh and Hunan, next to Tientsin the most important government seat in China. Yes because of the lack of roads, the immensely wealthy Chinese officials have as yet purchased no cars. The same is evident in the neighboring city of Hanyang. Not a car or a truck to be seen. While all other important provinces in China are devoting some study to the planning and construction of roads, the Liang Hu government has ignored to date this most essential step in the development of its resources.

Modern Road at Woosung

Owing to favorable weather, the construction work on the new road along the Woosung Creek, Woosung, under the auspices of the Woosung port works bureau, has made rapid progress and the first section completed before the time limit. At the sides of the newly built road trees will be planted.

A Modern Chinese Road and Transportation Company

The Shanghai-Minhong-Choling Automobile Transportation Co., Ltd.

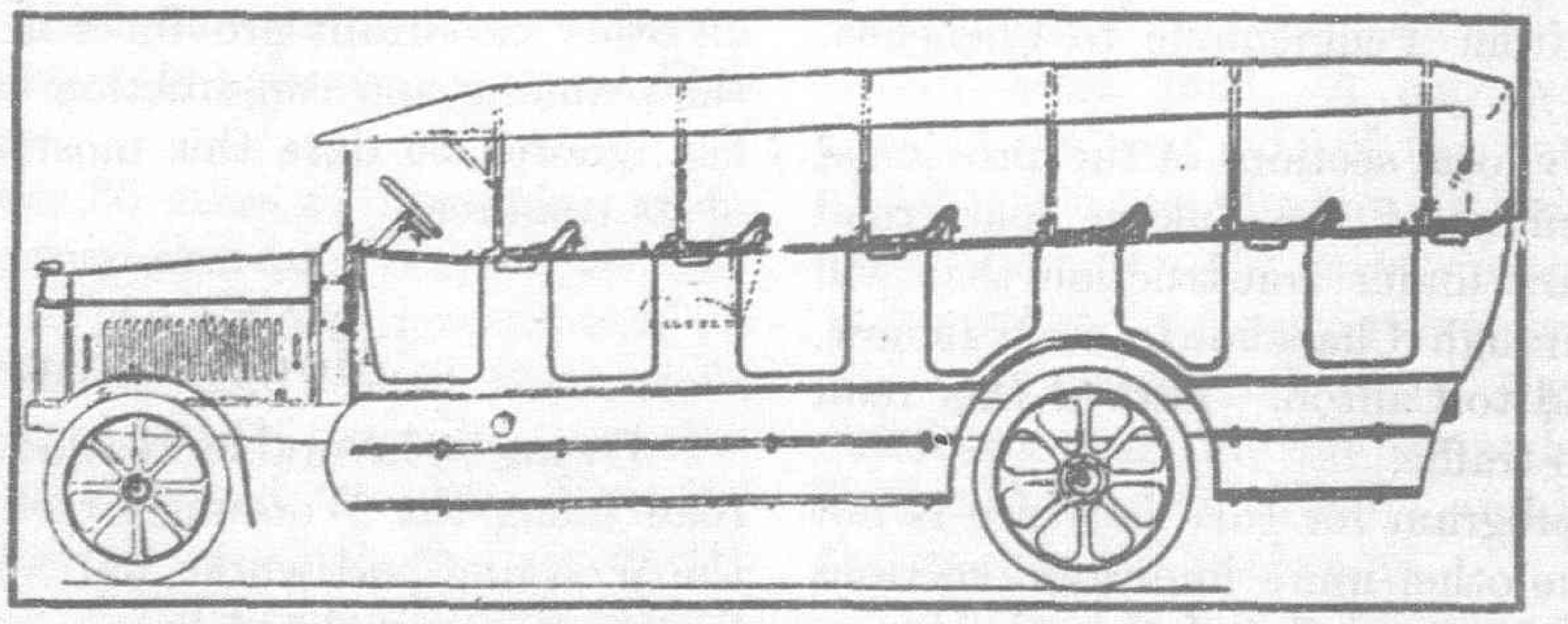
AT the present there are four road and automobile companies organized for operating out of Shanghai. The first of these, The Shanghai-Taichong Automobile Transportation Company, with general offices at Tai Teh Lee on Carter Road, under the management of Mr. Hung Pey-yen, commenced operations on January 1, on a thirty *li* (ten miles) section between Chapei and Lutien. This service has five new American buses accommodating 10 first and 16 second-class passengers, which cost Tls. 4,500 each. As the road is extended, additional cars will be added. There is also the Shanghai-Nanhui and the Shanghai-Chuensha Automobile Transportation Companies, with offices at Tsing Yuen Lee on Peking Road, jointly managed by Mr. Mo Sze-chai. The latest progress reports of these roads state that after two months of work on the Shanghai-Nanwei automobile road, the section from Chow-chair-doo to San-ling-dong has been completed and it is generally believed that at the end of the year the road will reach Chow-poo. Work on the two cement bridges known as Hung-dah-jao and Sun-chiar-jao has been started. It is expected that service between Chow-chiar-doo and San-ling-dong will be inaugurated within the year, while through traffic on the whole line will be possible by the end of April, 1922.

Major-General Li Ying Shih
General Manager of the Shanghai-Minhong-Choling Automobile Transport Co., Ltd.

With regard to the automobile road from Shanghai to Chuensha, great progress is also being made in construction work. The capital of the Company has been fully subscribed and surveying from Ching-ning-sze to Yee-chiar-jao completed. Work on two large cement bridges named Mar-chair-pang-jao and Dao-kiu-jao, will soon commence and are expected to be finished next March. The road will have a width of 40-ft. except at the most prosperous section from Ching-ning-sze to King-chiar-jao where it will be 50-ft. wide.

Full particulars regarding the capitalization and estimates of these three companies are not as yet available but we may take as typical of the many new road and auto transportation companies operating, projected or in process of promotion in China, the Shanghai-Minhong-Nanhui-Choling Automobile Transportation Company, Ltd., organized in Shanghai and registered with the ministry of agriculture and commerce in Peking, and at present actively engaged in pushing through its construction work. The estimates of costs and revenues of this company provide an excellent idea of similar enterprises in the Shanghai and adjoining regions and with allowances for variations in land costs, number of bridges and surfacing, will serve as a general guide for the rest of China. The most important commercial openings are for the sale of motor vehicles, steam road rollers, steel for reinforced concrete bridges, corrugated iron drains of the type employed in large quantities in America and elsewhere for road work, surveying instruments and private telephone installations. From the cross section of the road, it will be noticed that in this alluvial plain where stone is at a premium, surfacing is to be done with ashes, presumably to be collected in Shanghai.

The proposed road will start from the Wang-chia-Chiuh road on the outskirts of Shanghai and pass through Chin-kung-tang, Chaoho-ching, Lunghwa, Sin Lunghwa, Mei-chia-lung, Chu-chia-hong, Ong-pan-chao, Chan-chao, Pei-chao, Minhong, Tai-pin-shang, Hsiao-tang, Nan-chao, Sintze to Choling on Hangchow Bay, a distance of 95 *li* or approximately 32 miles. The capital of the company is $500,000 (Mexican) divided into 10,000 shares of $50 each. The general manager is Major-General Li Ying-shih, advisor to the civil and military governor of Kiangsu, military commissioner of Shanghai, ex-defense commissioner of Shanghai, commander of the 3rd mixed brigade, etc., and amongst the promotors are such well-known names as Mr. Li Ping-shi, Chang Yiuh-chu, Yao Tze-chang, Mo Tze-ching, Chien Sin-chu, Loh Sung-han, etc.

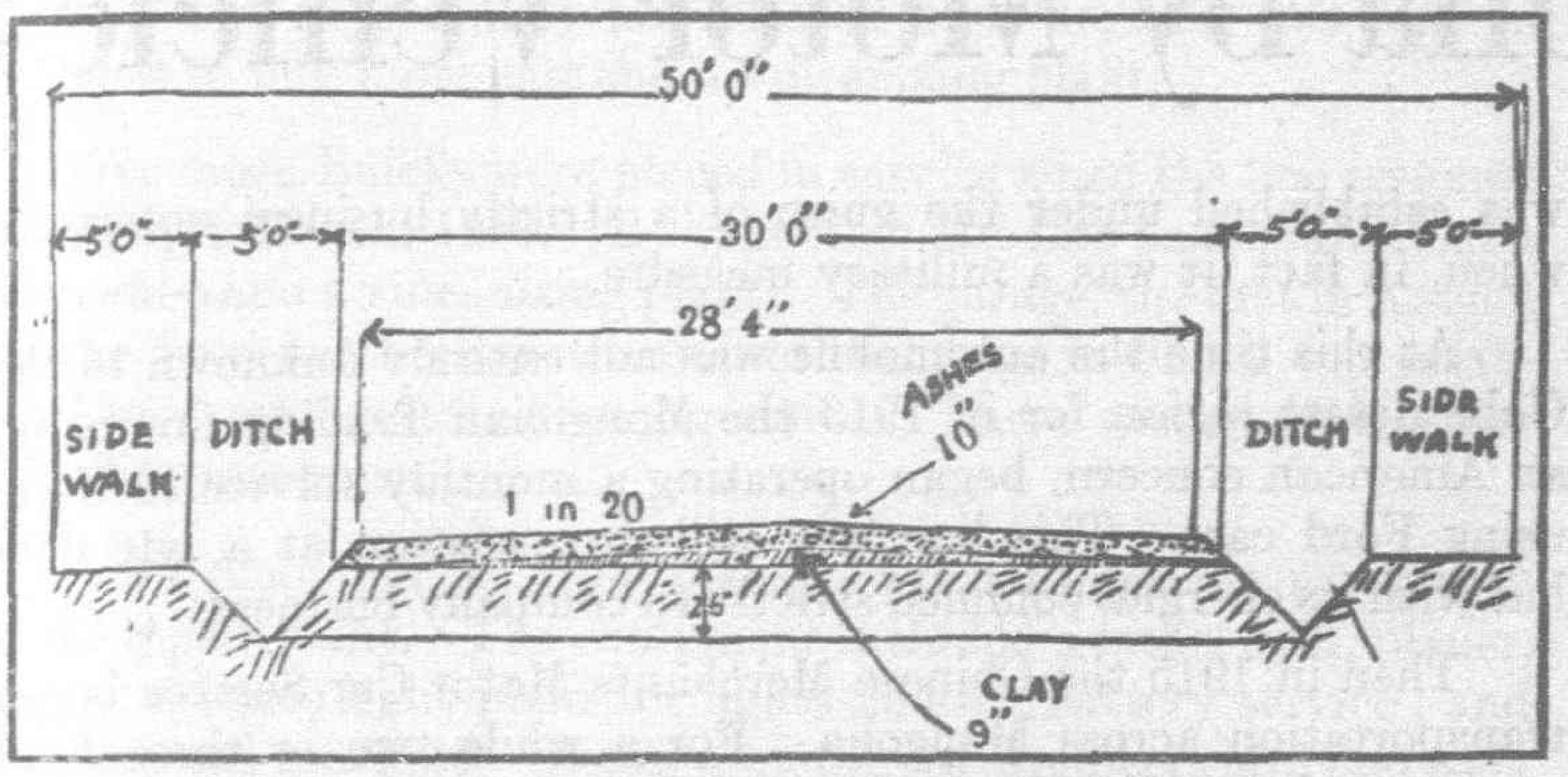


Design of Passenger Bus to be purchased by the Shanghai-Minhong-Choling Co.

The company will operate 20 passenger cars making ten trips daily between Shanghai and Choling carrying 24 passengers each trip at a fixed fare of 30 cents each from Choling to Tai-ping-shang, the station on the bank of the Whangpoo opposite Minhong. From Minhong to Shanghai the fare will be 30½ cents. This gives a possible total daily revenue of 20 by 24 by 10 by .605 or $2,904. On this basis, the company's prospectus says that a daily profit of

$1,560 is possible, which, although not stated, would indicate that the estimated daily expenses is placed at $1,344. The prospectus holds out the expectation of an annual "net profit" of $103,253 after deducting all charges, dividends, etc. The rate of dividend is not given. In addition, the company will operate four freight motor trucks making four trips daily between Shanghai and Choling. The tariff is fixed at $6.00 per trip, or a total of $96.00 per day income from this service. Special cars will also be provided for special trips at higher rates. The passenger cars are estimated to cost the company $7,000 each and the trucks $5,000 each.

These cars, illustrated on the preceding page, are to have a gasoline efficiency of 8 miles to the gallon; 30 h.p.; speed, 20 miles per hour; weight 2 tons; capacity 25 persons; height of car, 6½-ft.; width, 7-ft.·3-in.; length, 18-ft. 3-in.



Sectional View of Shanghai-Minhong-Choling Road

Note.—The drainage ditches are to be placed outside the Side-Walks.

(It was reported in the native press in the latter part of December that this company had recently placed an order with Leewoo, a German firm, for ten passenger and freight cars, the former to cost Tls. 2,700 each and the latter Tls. 2,750 each. The cars are expected to arrive in Shanghai in April next. "Leewoo" is the Chinese hong name of Carlowitz & Company, one of the most prominent German firms in China. It has been impossible to corroborate this report.)

In addition to the cars, the company will construct two steam ferry boats at a cost of $4,000 each for the passage of the Whangpoo at Minhong. There will be 14 stations along the route. The number of employees is placed at 12 mechaniciens, 48 chauffeurs (2 for each car), 44 on the road maintenance gang, 2 launch assistants, 2 launch captains, 2 deck hands and 40 road police.

EXPENSES.—Further light on the costs attached to road building and operating these native transportation companies is given in a separate itemized statement as follows:

COST OF LAND.—917 *mow* (one *mow* equals .15182 acres) of land will be required for the entire length of road, estimated to cost $62 per *mow*, a total of $56,854. The Shanghai station site will cost $2,500. With other expenses and allowances for the removal of tombs, the total cost of land is placed at $76,000.

EARTHWORK.—A total, of about 42,480 *fong*, is estimated as necessary for filling, grading, etc., costing about .33⅓ cents per *fong*, or a total of $14,160.

SURFACING.—The road is to be surfaced with a layer of ashes 10 inches deep over an area of 31,500 *fong* of road. At .70 cents per fong including cost of collecting and wages to coolies, this item will total $22,050.

BRIDGES.—29 reinforced concrete bridges with a total of 480 sq. feet of surface are provided for, the estimated cost for which is placed at $220 per square feet, or a total of $107,900.

AUTOMOBILES.—20 passenger cars at $7,000 each, $140,000, and four trucks at $5,000 each, $20,000, a total of $160,000.

BUILDINGS.—14 stations will be built. The four larger stations at Shanghai, Minhong, Taiping and Choling are to have warehouses and dormitories attached and are estimated to cost $26,000, while ten sub-stations will cost $500 each, a total of $31,000 for buildings.

FERRY BOATS AND JETTIES.—For crossing the Whangpoo, two ferry boats costing $4,000 each and two landing stages at $5,000 each will be required, a total of $18,000.

TREE PLANTING.—Over 24,000 trees will be planted along the road calling for an expenditure of $1,000.

FURNITURE AND FIXTURES.—Telephones, allowances to police stations for additional policemen, surveying instruments, furniture and fixtures for the various stations and offices are estimated at $20,000.

STEAM ROAD ROLLER.—A 9-ton steam road roller at $10,000.

TRAINING SCHOOL.—A fund of $1,270 is set aside for a training school for motormen, but prior to its opening, applicants will be sent to the school established by the Shanghai-Taichong Automobile Transportation Company.

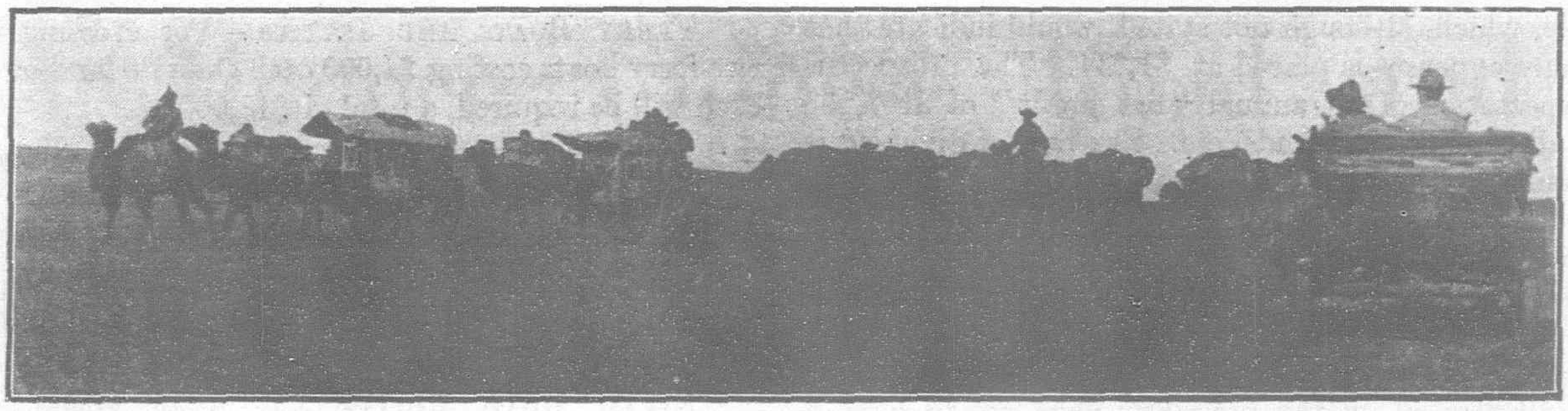
RESERVE FUND.—To provide for deficits in the above itemized estimates, a sum of $36,620 is set aside. Total, $500,000.

If the above estimate be taken as a guide for the volume of new business created for foreign automotive manufacturers, it would be fair to say that the sum of $210,000 roughly represents the initial value of orders for automobiles, accessories, road rollers, drains, reinforced concrete steel, surveying instruments, telephones, building hardware, tools, machine shop equipment, etc., or, about $7,000 ($3,500 gold) per mile. This would not include the follow-up and permanent demand for spare parts, repairs, tire renewals, gasoline, oils, grease and the replacement of worn-out machines in three or four years. It does not represent the possibilities that might be created in other parts of the country where rock is abundant for stone-crushing plants.

Opportunities for Road Making Machinery

It has been commonly accepted that under no conditions can the many labor-saving road-making machines compete with native coolie labor, and therefore the market holds out no inducements for such equipment. In a general way this holds true, but we have witnessed many instances where the reverse is also true. In certain sections of China, perhaps the time will never arrive when labor-saving machines will supplant the coolie, but we are becoming convinced that the old idea about coolie labor is a fallacy, and as China develops and the element of time is more and more taken into consideration, a market will be developed for up-to-date road-making machinery. We believe that the time is opportune for an intelligent study of these conditions on the part of the road machinery manufacturers, by practical tests on the ground. The Chinese, of themselves, will never take the initiative in this matter, and if a market is to be created for modern road-making machinery, the manufacturers should either individually or in combination send out some of their specialties and demonstrate upon the ground what can be done, especially in the saving of time. With large Chinese companies operating with big capital, the element of time will undoubtedly be given due consideration, and once it can be demonstrated that such machines can compete favorably with the native labor, a large and profitable market will be opened. But it will take time, patience and initiative. Like every other success in China, a few years of missionary work will have to be carried on without profits, in order to educate the Chinese. Experience tells us that once these most practical people are satisfied that these machines are applicable and profitable, they can be depended upon to order them in increasing quantities.

The North Manchuria Automobile Co. is being organized by Mr. Chi Hung-quan at Harbin to run a regular service between Harbin and Tsi-Tsi-Har via Suiyuan, and Charhar. Seven cars have been already purchased.



The Old and the New; Camel Carts passed on the Way to Urga

The Opening of Mongolia by Motor Vehicles

THE conquest of the Gobi desert will remain as an epic in the annals of motor transportation. Pluck, energy, resourcefulness, suffering and adventure have been the outstanding features of the many heartbreaking attempts to open up this vast inland waste to modern commerce. Many articles have been written describing the pioneer expeditions into this inhospitable territory, opening up the road from Kalgan to Urga and west from the rail head at Fencheng or Suiyuan to Kwihwacheng and across the desert to Urumchi. The necessity of rapid transportation between Kalgan and Urga, the Mongolian capital, and thence on to Kiachta and the Siberian railway has provided the Russians with many pretexts for devising plans for strategic railways designed for the domination of Peking and striking at Japan in South Manchuria from the rear in Eastern Mongolia. However, these railway schemes fell through, and the conquest of Mongolia devolved upon the automobile. In 1913, the Mongolian Trading Company, a subsidiary of an American firm (Andersen, Meyer & Company), pioneered the way with a monthly service of Ford cars between Kalgan and Urga. Although the activities of the various companies in opening Mongolia to motor traffic have been very fully described in previous numbers of THE FAR EASTERN REVIEW, we extract from a recent article written by Mr. Verne Dyson for the *China Press* the most up-to-date facts on this subject. Mr. Dyson, in describing the operations of the northwestern motor service, says that about five years ago Major-General Tinge Si-yuen, then managing director of the Peking-Suiyuan Railroad, suggested to the ministry of communications that the government should consider the building of a railroad between Kalgan and Urga, a distance of 672 miles, as a military precaution in the event of a revolt in Outer Mongolia, but the government could not finance it and the plan was given up. Then the general suggested a motor service between Kalgan and Urga. Enough money was available to buy five or six motor cars and so the line was established under the guise of a strictly business enterprise when, in fact, it was a military measure.

At this time the automobile was not entirely unknown to the Gobi desert region for in 1913 the Mongolian Trading Company, an American concern, began operating a monthly service to Urga, using Ford cars. This line was still in operation at a late date but with its energies confined strictly to company business.

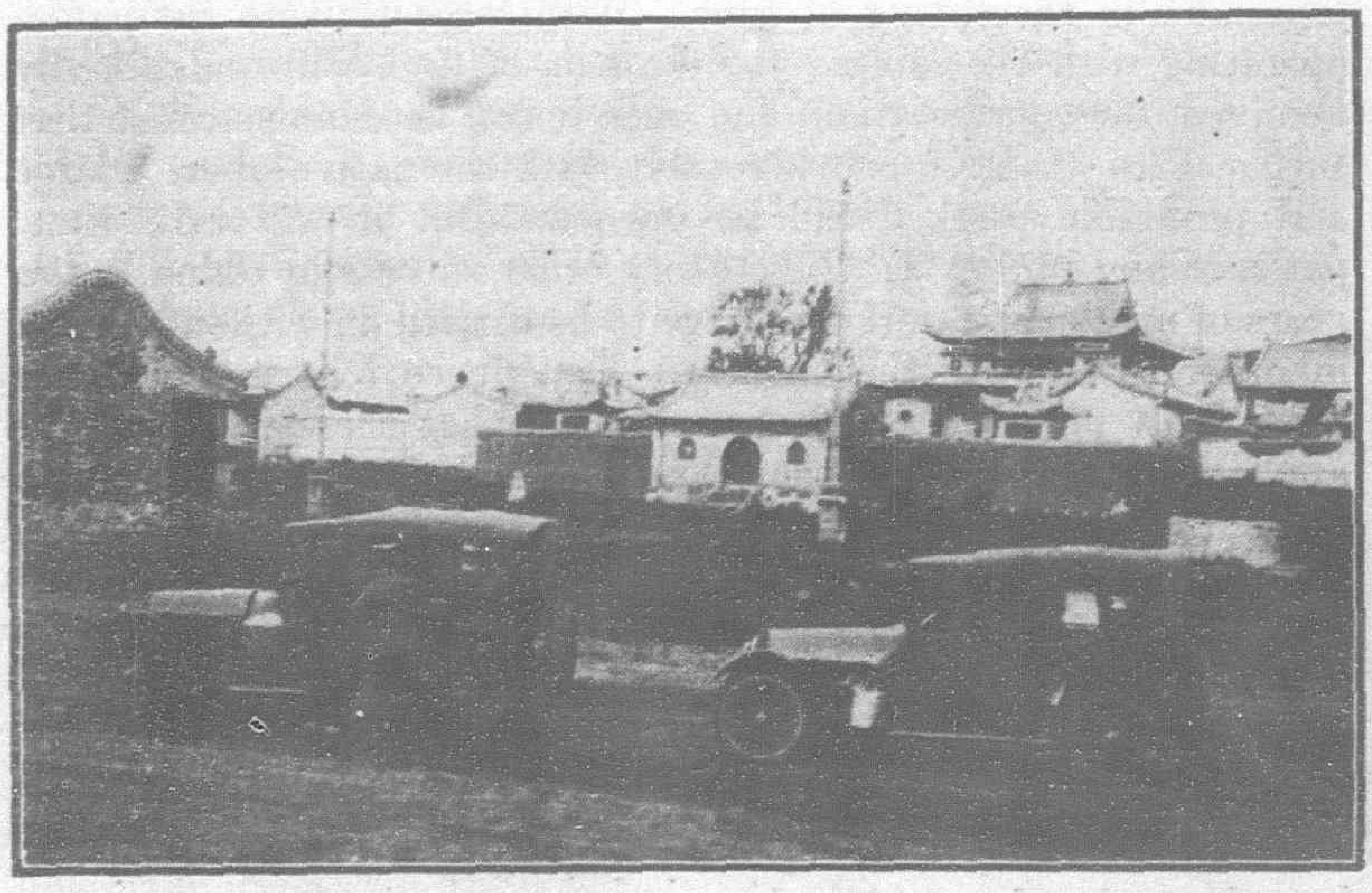
Then in 1915 the Chinese Merchants Motor Car Service began transportation across Mongolia. For a while two or three Ford cars were dispatched from either end of the route every ten days. Heavy trucks were tried on this line but without success. After three years the company suspended, due to a breakdown in management and scarcity of money.

The government's project, the north-western motor service, came into being in the summer of 1917. Mr. Y. C. Loo, the superintendent, started on his path-finding trip on June 16 with a fleet of five Buick touring cars (six cylinder). The operating force consisted of two mechanics and seven drivers. There were several government officials, including Mr. Yu Yen-feng, now managing director of the Peking-Hankow Railroad and then an engineering expert with the ministry of communications. Mr. Yu had his secretary and there was another engineer, Mr. Huang.

On this initial tour the principal cargo of each car was gasoline. Aside from its regular tank, each machine had a forty-gallon tank on each of its two running boards. One car carried twenty-three 10-gallon cases of gasoline.

The first lap of the journey was Kalgan to Pang Kiang, 147 miles.

The expedition remained in Pang Kiang three days, repairing, testing and tuning-up. Made Udda, the next stop—119 miles—by 8 p.m. on the first day without mishap.



Lama Temple near Top of Plateau, about 40 Kilometres from Kalgan

Near the Top of the Plateau

Between Udda and Turin part of the road was missing. There was no serious trouble, however, and the distance of 114 miles was covered before dinner time. It is a short run between Turin and Urga, only 89 miles, and the destination was reached at 4 o'clock in the afternoon. There was a stay of one week in Urga before the return trip began.

Thus was the north-western motor service inaugurated. On August 5 three cars started from Kalgan with seven passengers. The cost of a one-way ticket was $120, and each passenger was allowed a maximum of twenty catties (thirty pounds) of baggage.

The three cars brought back twelve passengers and business continued to be good. When the traffic was suspended on October 10 on account of the cold weather the line had made a net profit of $4,000. The government was pleased and Mr. Loo was sent to Shanghai to buy more cars and a vulcanizing plant.

Five more Buicks were placed in service when the line resumed operation in March, 1918. By that time Mr. Loo had established a repair shop and a vulcanizing plant. The garage, the first in Kalgan and the most northern institution of that kind in China, was established in a remodeled railway godown. There was room to store thirty-five machines.

From Shanghai Mr. Loo transported considerable machinery for the repair plant. The equipment included a lathe, drill, planer, shaper; a Delco light plant for lights and for battery service; and a compressed machine. Being a motor car-engineer, Mr. Loo took pride in making it a model garage. He had seven mechanics.

On the first trip of the 1918 season there were twenty-two passengers and business continued to be good up to October when traffic was suspended. A total of eighty tires and twice that many inner tubes were worn out that season. The net profits for the months were $25,000. Again, the government was pleased and Mr. Loo was directed to buy more Buicks and he added eight to the string. It was decided to operate the line all through the winter of 1918-19.

"We managed to keep the cars going all winter although it was from thirty to fifty degrees below zero for about four months," Mr. Loo explained. "Under these conditions motoring reaches the maximum of hardships. In the radiators we used a mixture of half alchohol and half water. In cold as intense as this the engines had to be kept going continuously, even at night when we were not running. We had to have a guard who stayed awake all night and kept the engines running slowly. You can imagine the difficulties of starting an engine when it has cooled to 50 degrees below zero."

During the winter three to five cars left Kalgan for the north every ten days. The total income for the year, ending with October, 1919, was $140,000 and of this amount, $80,000 was clear profit. Once more the government at Peking was pleased and again Mr. Loo was directed to buy more cars. In the fall of 1919 he purchased twelve 7-passenger Buicks. There was now a total of twenty-four cars in operation.

Immense profits were expected from the line in 1920, but early in that year began the revolt in Outer Mongolia. By April all commercial passenger service had been suspended and the entire equipment of the line was devoted to transporting the soldiers of General Hsu Shih-cheng ("Little Hsu"), the commander of frontier defense.

All through that summer the motor line was devoted to military uses. When Baron Ungern took Urga he confiscated three motor cars belonging to the government's motor line.

While the Peking government was frantically engaged in transporting troops across Mongolia, eighteen one and two-ton trucks were purchased to augment the touring cars. The trucks were found to be too heavy for the roads and their use was discontinued after only four trips.

All through 1921 the equipment of the motor line, costing a total of about $250,000, has remained idle at Kalgan with the exception of passenger service which has been maintained between that place and Dorlonor, the distance of 300 *li*, and without profit.

For more than one year the hostility of the Mongolian officials in Urga and the numerous bandits along the northern part of the route have made it impossible to operate the line, but these conditions have changed now, it is said, for the better.

The Packard Record

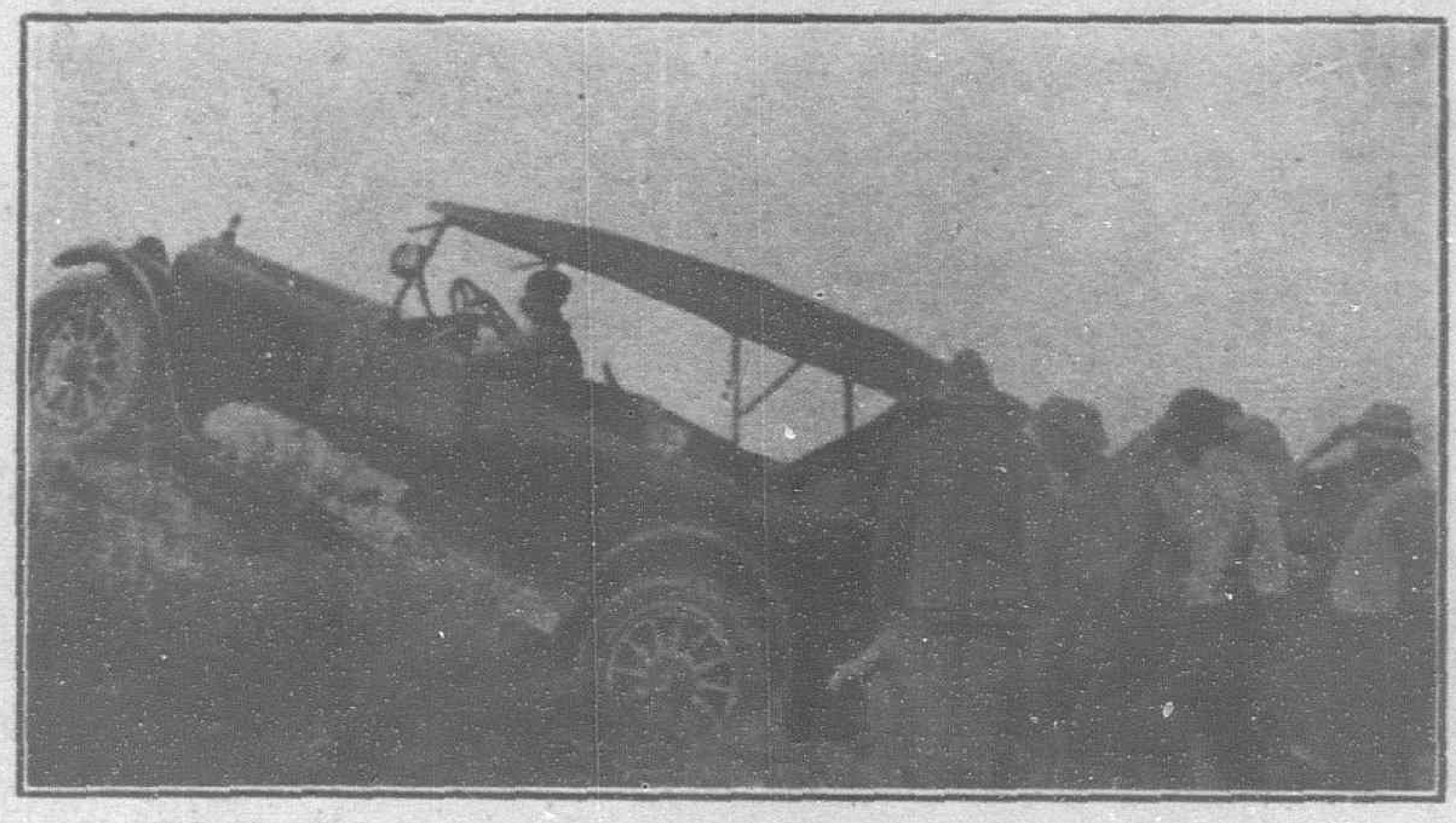
Although the Ford and Buick machines played such a prominent rôle in the opening of communications with Urga, their exploits were eclipsed later on by the daring trip of Lieutenant George Moskovski of the Polish army in shoving through over 2,000 miles of desert between Fenchen and Urumchi the capital of Chinese Turkestan, with two Packard twin sixes hauling trailers, and returning over the same distance to their starting point. The caravan that started on this epoch-making trip consisted of two Packard cars, one Pierce-Arrow 2-ton truck, with a four-wheel trailer, a Broadway truck with a two-wheel trailer, an Empire sedan, an Empire touring car and a Ford. This expedition started out to prove that motor transportation was possible and that goods could be brought from the interior to the market in a much more efficient manner than could be obtained through the use of camels and other beasts of burden.

The roads ended at Kweihwacheng, and three cars and the two trucks were forced to put back. The two Packard twin sixes, however, continued. Both carried trailers. They were followed at several days interval by camel trains which carried supplies for the return trip as gasoline stations are not exceptionally numerous in Western Mongolia. Long stretches of deep sand added to the difficulties of motoring, and in one instance, the sand was so deep that one of the trailers had to be abandoned. At a point about 700 miles west of Kukuirigou, and 300 miles north of Kanchow the motorists found themselves confronted by a long range of mountains and sand hills through which the guide was unable to discover a pass. As this region was the very heart of the desert and practically uninhabited, there was no one to turn to for further information, and the few natives seen fled precipitately from the "devil wagon." Eventually, a pass was discovered and the party proceeded.

In spite of the handicap of the trailers the two cars finally reached Urumchi about two months after leaving Tientsin.

The actual traveling time was, of course, but a small fraction of this period. The same hazardous features were encountered upon the return trip.

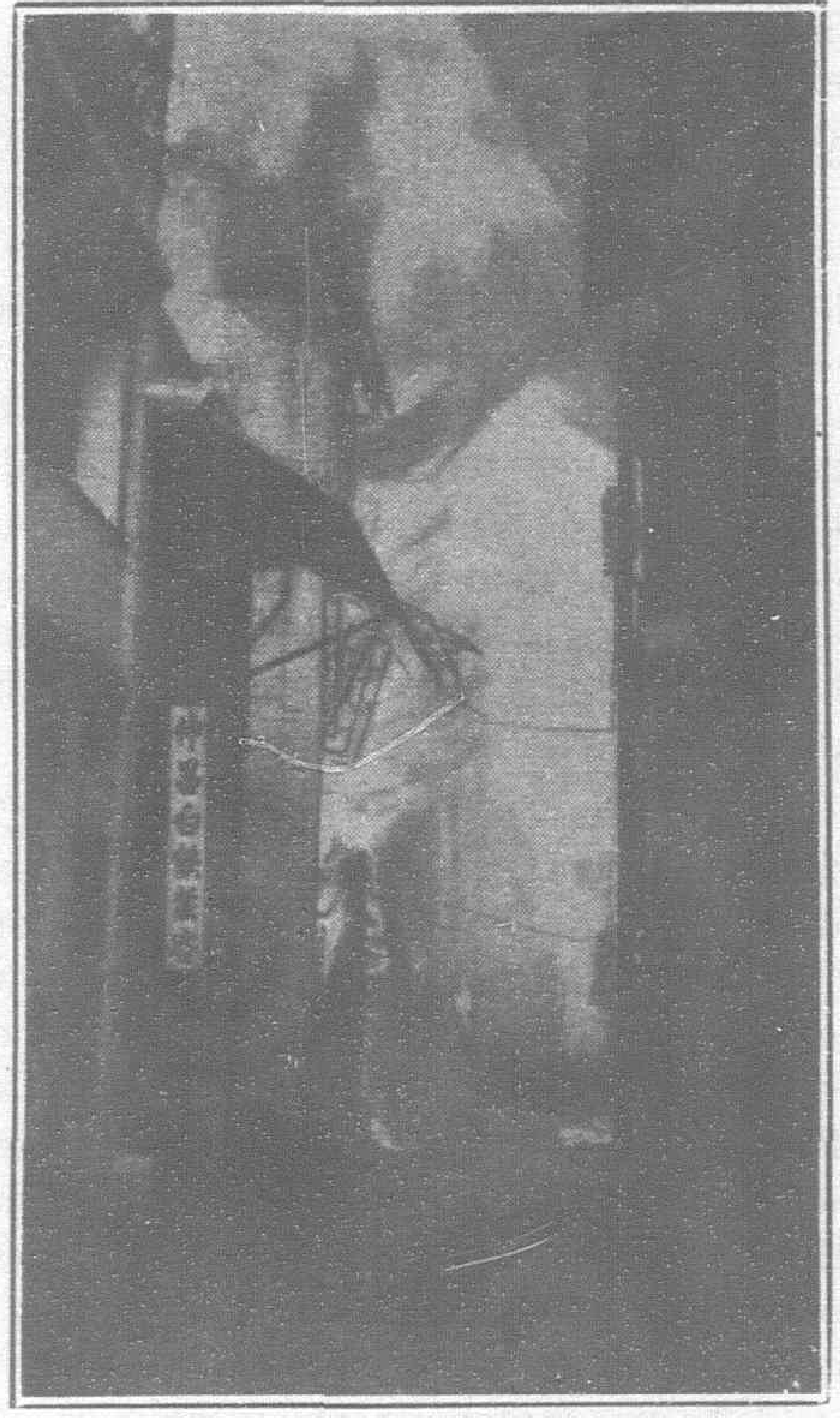
The trip proved that while it is entirely possible to substitute the motor car for the "ship of the desert," the old methods will likely continue for some time, as only a car of the very highest quality and with a super-abundance of reserve power can stand up under the trying conditions of the trip.



The Packard Stuck in the Sand 300 miles from Kukuirigou

Canton's New Maloos

NO other city in China proper can show the results of clean government in good roads and streets as the capital of the southern republic, where, under the stimulus of Dr. Sun Yat-sen and his son, Mr. Sun-fu, the mayor of Canton, a group of young western-educated engineers are making a record for themselves that will stand as an example of what can be done in China under an honest administration. Although much of the credit belongs to those higher up, the actual work of reform is being carried out by a group of earnest young men whose names do not always appear on the plans and other official documents given out for publication. The work of improvement goes back to the early days of the revolution, when General Chen Chiung-ming, acting governor-general of the province, approved the scheme of Mr. Cheng Tien-tow, a graduate of an American school, then head of the public works department, to tear down the old walls to provide space for new roads. Some progress was made in this direction, when the reactionary Gen. Lung Chi-kwong assumed control of the government, and ordered the walls to be rebuilt with the old materials. When this northern satrap fled and the new element returned to power, a municipal council was formed to take measures to build streets and lay out parks, and Mr. Lun Wan-sheung, an English B.Sc., engaged to act as chief of the public works department. However, another change brought Mr. H. L. Wu into the direction of this office and under his supervision most of the actual work has been carried out. Mr. Cheng Tien-tow and his associates, Mr. R. C. Johnson, now chief engineer of the Canton-Samshui Railway, and Mr. H. L. Wu mapped out the work. The present director of public works, Mr. H. L. Wu, received his technical education at the Ohio Northern University and University of Illinois, U.S.A., and on his return in 1911 joined the Canton public works, then under T. T. Cheng, as engineer, resigning in 1915 to join the American section of Szechuan-Hankow Railway.

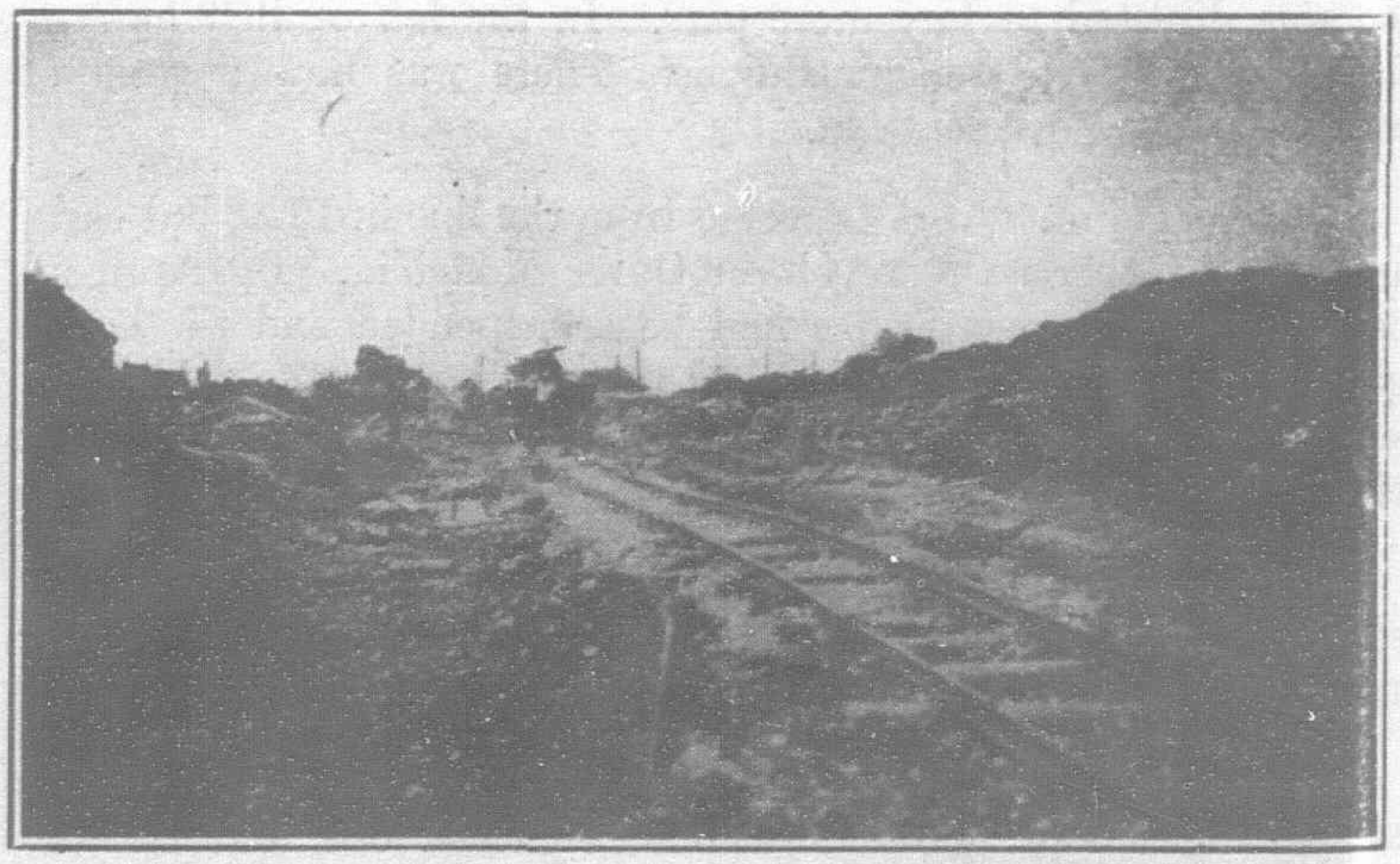


A Fire in Canton's Narrow Streets. Fires are frequent in Canton and give the Government a chance to rebuild the burned districts along modern lines

Canton's Famous Streets, now giving Place to the less Picturesque Paved City Street

Mr. Wu is a charter member of the Chinese Institute of Engineers and a consulting engineer of the Koushing Engineering Co., a concern composed of the well-known Chinese mining engineer Mr. C. S. Lowe, and Mr. Peter Soohoo, an associate member of American Society of Civil Engineers; Mr. G. Y. Fong, an electrical engineer, and some other experienced engineers in that city. In 1912, after the big fire in Canton, Mr. Wu introduced many modern streets among which are an important portion of the Wing On avenue, the West Bund and the Cooper Island, Tai Sha Tau. He directed the survey party and planned out the reclamation work of the island in 1913.

Co-operating with Mr. Hu are other bright, forward-looking, hustling young Chinese in charge of other municipal departments. Directing the public park bureau is Mr. Yeung Sik-chung, a B.A. graduate of the College of Architecture, Cornell University. If his plans carry through Canton will have five public parks. The chief of the land department of the Canton municipality, Mr.



TEARING DOWN THE OLD WALLS OF CANTON

Six miles of wall containing 800,000 cubic yards of masonry and dirt were demolished to make room for broad new highways along which rush the modern motor car and autobus

A Broad New Maloo in Canton

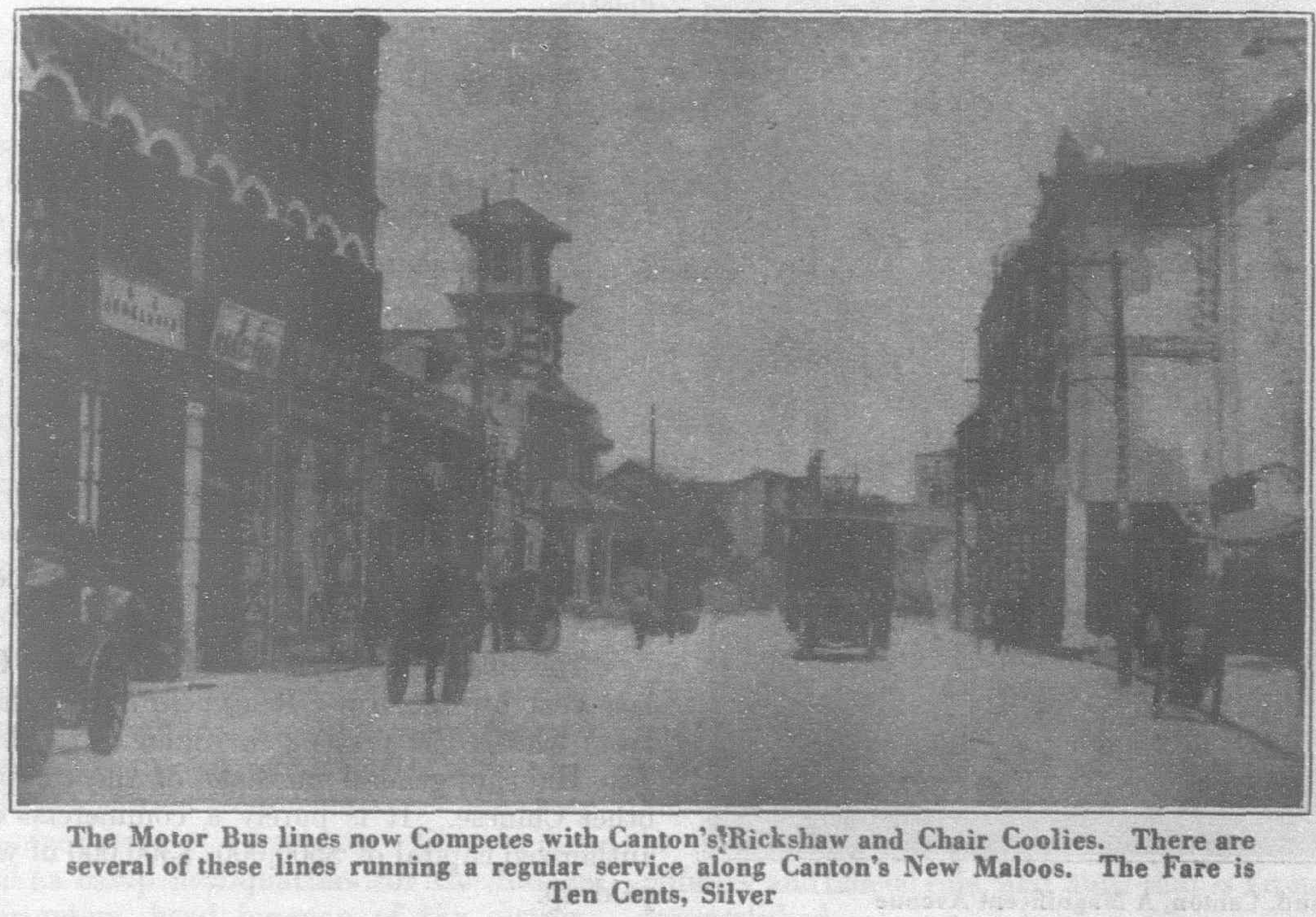
On the Way to the City Yamen

Luan Chang, is a graduate of the Tangshan Engineering College, an M.S. from the University of Illinois, gaining his practical experience as designer with the Baldwin Locomotive Works and as ordnance designer with the Bethlehem Steel Corporation. Before joining the municipal government he acted as technical adviser to the Kwangtung Arsenal. At the head of the fire department is found Mr. Chue Yue-tat a bright and active young engineer who is bringing his department into line as rapidly as finances will permit. In Mr. Chen Chung-ming, the city of Canton has acquired another live wire as chief surveyor. These young men, working in close co-operation with Mayor Sun-fo, are rapidly transforming Canton from the "City of the Awful Stink" into a place fit for human beings to live in.

The demolition of the walls gave employment to over 6,000 laborers working under nine contractors who were awarded the contract in sections. The total length of the old city wall was nearly six miles with an average height of 24-ft., a width of 43-ft. at the bottom and 35 at the top. The wall around the new city was 15-ft. high, 17-ft. wide at the bottom and 13-ft. at the top. The work of demolition involved the removal of some 800,000 cubic yards of masonry and dirt, and was commenced in December 1918. With this as a start, the work of road building has gone on apace, and under the rule of the Kwangsi military government in 1919, the old wall disappeared and 37,000-ft. of broad highway was constructed. This good start was continued under the new administration which has to its credit a further 30,000-ft. of avenues with another 50,000-ft. under construction. The plans call for the extension of the bund around the Shameen island and the gradual extension of the wide street system over the entire city and into the surrounding country. In extending the city limits great difficulties have been experienced in the removal of millions of graves. Only in this manner could proper provision be made for the living, and much new and valuable building land has been made available. In connection with the street system goes the creation of parks, playgrounds for the children and tree planting. One public garden has been completed and three more are awaiting necessary funds for development. The plans also call for the sale of all the old official yamên sites and with the funds so obtained a new civic centre will be erected in which all of the municipal and provincial government offices will be housed. The American influence is again seen in this new departure, as the work has been entrusted to the well-known firm of American architects, Murphy & Dana, the designers of the Rockefeller Foundation at Peking, the Yale in China at Changsha, and other important buildings.

With the construction of wide streets the automobile, auto bus and truck have made their appearance in large numbers. Within a few months after the opening of the new roads over forty motor cars and a motor bus service were in operation in a city which for centuries had been practically closed to wheeled traffic. Each month sees some new advance in road building and the extension of motor car and bus services.

By July of last year, or within a little more than twelve months after the opening of roads in the city, 125 motor cars were registered with the Canton municipal government, and many road and auto bus schemes are now on the tapis and gradually assuming tangible shape. One of the motor bus lines in Canton is operating 15 F.W.D. trucks manufactured by the Four Wheel Drive Auto Company of Clintonville, Wis. These trucks are equipped with passenger bodies made in China, each truck hauling a trailer, the combined seating capacity being 70 persons. A motor road has been proposed to connect the city with the famous Loh Fo Hills which will cost $150,000 to construct. With the proceeds from the sale of public



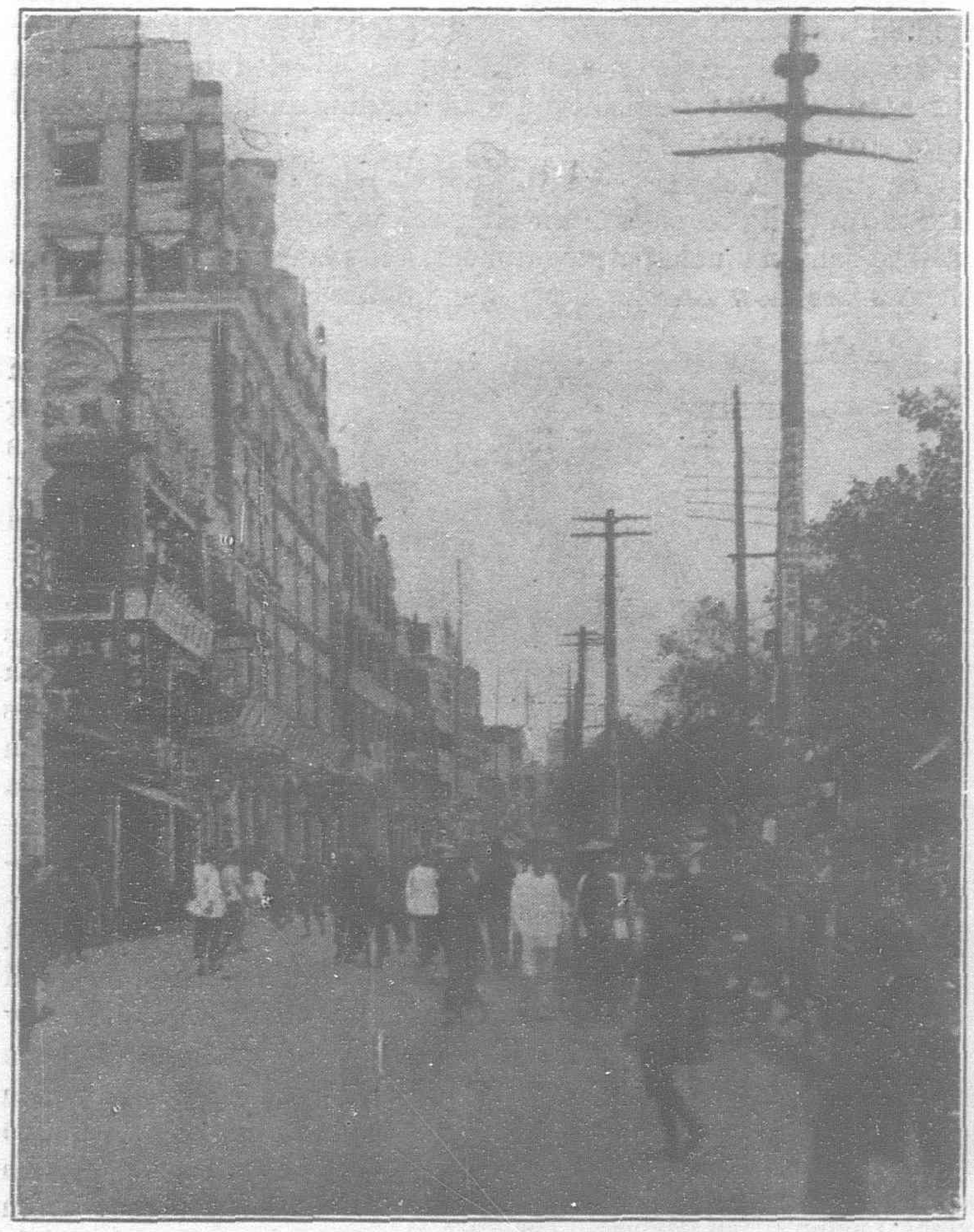
The Motor Bus lines now Competes with Canton's Rickshaw and Chair Coolies. There are several of these lines running a regular service along Canton's New Maloos. The Fare is Ten Cents, Silver properties and a sum of $100,000 from the provincial treasury the public works department called for tenders in July for the construction of the uncompleted sections in the first road system including the Pan Fook Maloo, the great South Maloo, the Yet Sou Central and the Mun Ming Maloo.

By December witnessed the completion of the extension of the Yuek Shau Maloo, 6,000-ft. in length, connecting the Ta Sha Tau station of the Canton-Kowloon Railway and the northern section of the same highway.

The survey of a road from Canton to Tsing-Sing district is now finished. The road will start from Sha-hoo, outside the east gate, *via* Inn-tong and through the foot-path of the white cloud mountain directly to the district of Tsingsing, a distance of sixty miles.

The public works department has issued an announcement that several maloos will be opened in Saikwan in order to facilitate communications in that part of the city. Starting from the western end of Sap Sam Hong Street, a 40-ft. maloo will be built to the eastern end of the street with a 10-ft. sidewalk on each side of the maloo. Another maloo of the same width will connect the west bund and the present Sap Sam Hong Street. The Wing Yang Street and the Tak Cheng Street will be widened to 20 and 24-ft. respectively. The above schedule has been approved by the executive council of the municipality and surveying is going ahead.

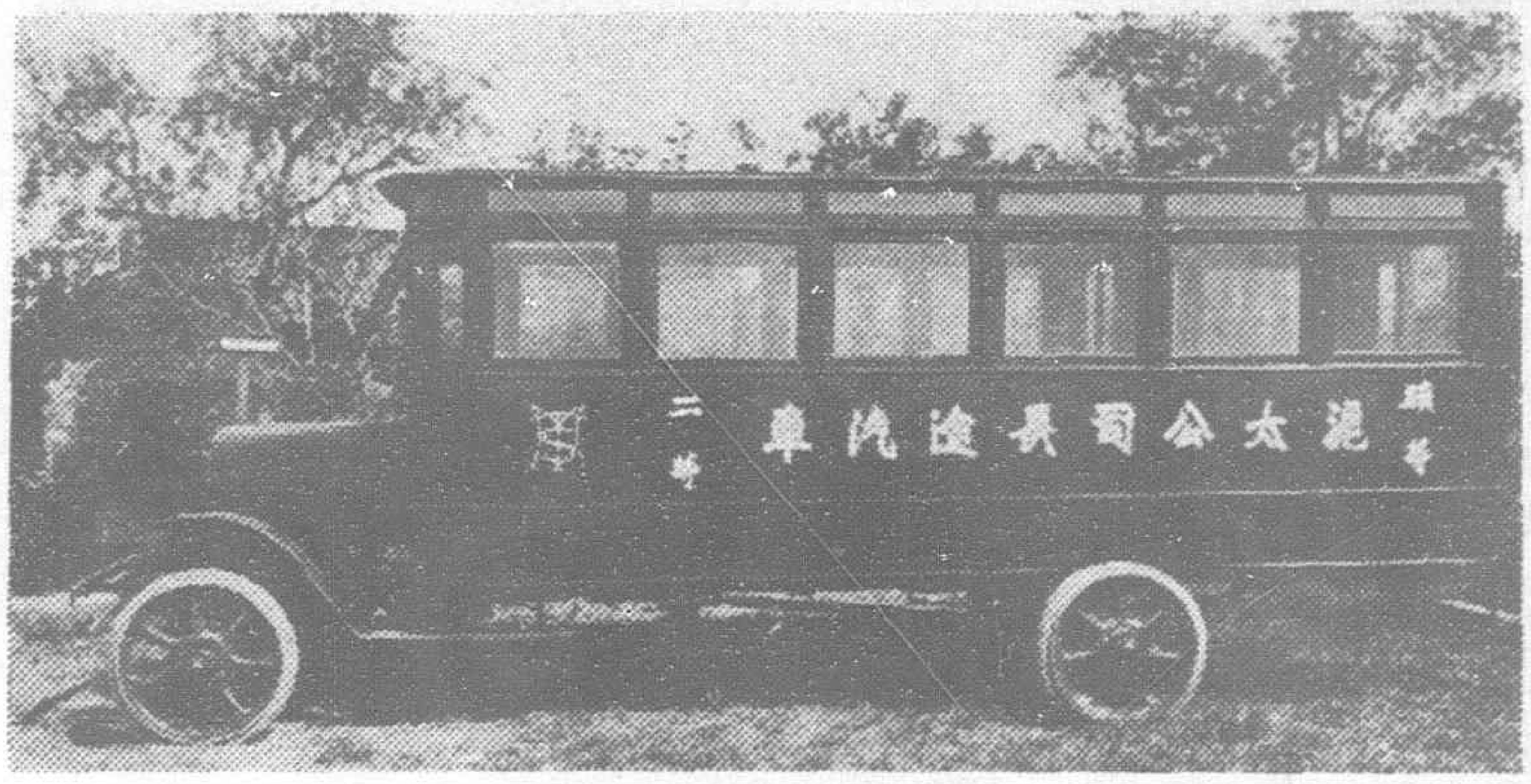
That Canton is awake, spurred onwards by the zeal of young China to show the world that they can do things, is attested to in many other directions. Communications and public works are receiving all the attention and revenue that is not diverted to the military campaign against the north. At the request and under the authority of the provincial assembly, the city engineer is now working out the plans for a steel bridge over the Pearl River to connect the city with Honam that will cost $2,500,000.



The New Bund, Canton, A Magnificent Avenue

Shanghai-Taitsang Motor Service

THE first 'bus of the Shanghai-Taitsang Motor Service Co., Ltd., made its first journey on January 1st from new Kung-ho Road, Chapei, to an intermediate station called Tazang, 18 *li* (six miles) from Shanghai.



Type of Autobus on Shanghai-Taitsang Service

For the first week the trips will be, more or less, trials for the new service which will later extend to a suburb of Taitsang called Liuwu, a distance of about 72 *li* (24 miles) from Shanghai. Work on the road between Shanghai and Liuhu has been finished but there are still several bridges in course of construction which need to be completed before the through service starts. This road is being built by the Paoshan district authorities and rented to the Shanghai Taitsang Service Co. is about 30-ft. wide. It is estimated that the cost will not be less than $300,000, which sum has been paid by the company as a franchise fee. There are about 40 bridges altogether and nine stations, namely, Shanghai (Chapei), Panpoo, Tazang, Tongchao, Liuhong, Lootien, Pankiachao, Zauchinchao and Liuwu.

The motor-buses to be used are of American make, especially suited for the local conditions. At present there are four large carriages and four small ones. They cost approximately $4,000 each. When business improves later on, the company expects to be able to attach trailers. The larger carriages seat 30 passengers and the smaller ones 15. The present cars are divided, like the ordinary tramcar, into two compartments, the first and second classes.

Fares are as follows:—
Shanghai to Panpoo—
First class 15 cents.
Second class 10 cents.
Shanghai to Tazang—
First class 30 cents.
Second class 20 cents.
Pampoo to Tazang—
First class 15 cents.
Second class 10 cents.
And *vice versa*.

It is expected that the through service to Taitsang will be started about three months hence.

The Shanghai-Taitsang Motor Service Co., Ltd., was formed last year by Mr. Hung Pah-yuen, an ex-Shanghai district magistrate who is the present chairman of the board of directors, Mr. Tsu Hai-shu, general manager of the company, and a number of other Chinese. It is purely a commercial company and has an authorized capital of $500,000, $300,000 of which has already been paid up.

Road Construction in China

SUCH data as is available for estimating the cost of road building in China is largely the result of the careful tabulation of expenditures kept by the American red cross society's engineers in constructing the highways in Shantung, Chihli and Shensı. We assume that the full reports of this work can be seen at the Red Cross headquarters in the United States, where the manufacturer of road-making machinery and contractors desiring information about item costs will receive every courtesy. However, some interesting information was given out in a recent lecture delivered by Mr. Lawrence Impey before the students of Peking College. Mr. Impey was chief engineer of the Red Cross during the recent famine relief operations in China and in that capacity did splendid service. We are indebted to the *Peking Daily News* for the full report of this lecture. After sketching rapidly the preliminaries leading up to the actual commencement of road construction, Mr. Impey then concentrated on the engineering problems, pointing out that the work originally commenced in Shantung was begun in the winter months when work is not usually done, and therefore the difficulties there were much greater than in other sections.

Again, the large quantities of sand encountered made construction very difficult, as there was no rock available, unless a light railway should be laid, and rock quarried and brought in from Tsinan, while there was almost no clay to be found either to serve as a binder to the sand. Up in Shansi the construction was of a very different character, as the road passed through mountainous country, and a large amount of rock cutting and blasting was necessary, together with the construction of numerous culverts and bridges to allow of the free passage of the streams which rise so rapidly in the rainy season, as to render traffic extremely difficult, if not dangerous.

In principle it was arranged to construct a twenty-foot highway, with a crown six inches above the side of the road, and a slope to the bank of less than forty-five degrees, while the whole road was raised several feet above the surrounding country where possible, in order to avoid the danger of floods. A two-foot "berme" or footpath was constructed half-way down the bank on both sides, partly to avoid subsidence, partly to give greater safety to traffic, and in many cases trees were planted along this to establish it and to shade the road.

A fifty-foot right of way was found to be necessary to provide the material for the road construction, and the excavations on each side of the road served as drainage ditches. The earth was thrown into place by hand, Chinese and foreign shovels being used together with carrying baskets, and the soil was then rolled or tamped in six inch layers by wooden hand tamps or stone rollers such as the peasant uses in his grain yard.

It was found that this construction would carry a loaded Ford truck quite satisfactorily at a speed of some thirty miles per hour, and that the laborers could place and tamp about one *fong*, or one hundered cubic feet, English, of earth per day. The workmen were recruited from the afflicted villages after an examination by the Chinese and foreign committee, and were organized in gangs of thirty, each under a headman of their own choosing, and each gang bringing their own cook.

Camps were provided in the villages along the line of the proposed road by arrangement with the village headmen and the *hsien* magistrates, not more than three hundred men being in any one camp, in order to avoid disease and facilitate handling and feeding. Several gangs were grouped together under a Chinese foreman, and were allocated to a certain section of road, while every ten *li* or so was under the supervision of a foreigner. Chinese inns and old temples were used as camp headquarters for the foreign staff and the clerks, interpreters, head foreman of the section, etc., and here under the district storekeeper was held the grain for feeding the workmen.

The payment consisted of five catties of mixed grains for each *fong* of tamped earth, and to enable this to be made a record was kept of the daily amount of work done by each gang, which was balanced every two weeks. A daily ration of about two catties of grain per man was made, together withan issue of fuel and salt and vegetables, which every night the gang accounts were settled up, and the men allowed two days to take their surplus rations to their families. I think that it is advisable not to move workmen more than sixty *li* from their homes where it can be avoided, and to only recruit sufficient to carry out the work in that area in a given time, about three or four gangs to a *li* being sufficient as a rule.

To turn now to the figures of the last famine relief, the total funds expended were Mex. $2,428,000, subdivided as follows:

	Amount	Per cent.
Food and wages to workmen	$2,025,000	83
Medical and sanitary	25,000	1
Commissary, stores, salaries	92,500	4
Engineering and transportation . ..	181,000	8
General (Peking and field headquarter).	104,000	4
	$2,428,000	100

The cost of the various roads per mile is approximately as follows:

Shantung dirt road	per mile	$1,719
Hantan dirt road	,,	3,500
Shansi dirt road	,,	6,410
Honan rock road 85% macadam ..	,,	1,200
Tientsin dirt road	,,	
Peking dome macadam	,,	4,166
Tientsin dirt road	,,	
Paotingfu over old cart track	,,	600

Altogether 860 miles of road were built at an average cost of $2,823 per mile, employing over 50,000 workmen altogether, and feeding some 250,000 dependants, the whole of the operations, from the inception to the closing down of work, taking nine months. Comparing this with other figures, the most economical I can find are those of the Taokow-Chinghua Railway, which shows a cost of $1,383 per mile for earthwork alone, to which would have to be added such items as bridges, overhead, etc., while it should be recognized that that work took place some fifteen years ago, when the cost of labor and food for labor was less than half what it is at the present time.

With regard to road construction I would like to point out that the narrow tired cart is the most destructive instrument of transport I have seen, and it should be either kept to a track at the side of the main road or done away with by means of a subsidy if possible, and a broad tire substituted. The greater part of the time and labor employed is used on the cuttings, embankments, etc., and only a small amount of skilled labor on the bridges, culverts and permanent way, so that I think in the future it will be found quite practicable to employ famine work on this very important branch of communications.

There are two principal difficulties which present themselves to the worker on these lines which I would like to refer to in closing. Firstly, the decentralization of government has rendered it difficult to inaugurate and carry out any united policy, while the people in general seem apathetic to the action of the authorities, unless it affects them directly. Secondly, the idea of public service seems to be in abeyance, possibly owing to the continued dominance of military and official rule, and until that is aroused very little can be accomplished.

The Far Eastern Review

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ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, JANUARY, 1922.

The Future of Transportation in China

(A Word to the Consortium)

THE prolonged consortium deadlock and consequent delay in railway construction in China has undoubtedly created the opening for the extension of motor highways and the sale of cars and trucks, opening markets for one group of maufacturers, while others, dependent to a greater degree upon foreign financing, are compelled to sit tight until some way is found to overcome the obstacles to re-opening negotiations for railway loans. There is every evidence that the higher Chinese authorities are awakening to the fact that new highways and motor transportation under their own control are a greater and more immediate source of profit and revenue than foreign loan-built railways with their supervision over expenditures and operation. A highway scheme that promises anywhere from twenty to fifty per cent. profit the first year, holds out a much greater inducement than a mere eight per cent. railway loan from which adequate returns may not be forthcoming for many years. The prospects of high profits held out by these new companies comes nearer the Chinese idea of business and the old pawnbroking system of banking, than anything yet placed before them.

It is significant of the trend of the times, that one of the first acts of the new Liang Shih-yi administration was to issue a mandate exhorting the people of all the provinces to unite with the officials in opening up new roads, emphasizing their urgent necessity to promote commerce, industry and prosperity. The new Peking cabinet has been selected from the most coldly practical clique that modern China has produced, business men, promotors, financiers all, who think in terms of millions, and have had a finger in nearly every scheme of importance negotiated these past twenty years. A shrewder group of financial politicians cannot be found in any other country of the world. They have Tammany backed off the boards; Mark Hanna and other politicians of a past generation who carried the American senate in their vest pockets, could sit at their feet and imbibe wisdom in the ways of running a government for the benefit of Big Business.

The new cabinet, is, in effect, a railway, or perhaps better expressed, a transportation group, whose power and wealth is derived from successful manipulation of the existing state railway revenues over a period of ten years or more. These keen practical minds with an inside knowledge of construction costs, volume of traffic and surveys of all parts of the country at their command, realize the possibilities of motor transportation, and apparently, have lost no time in encouraging the movement for the cheaper, and for them, the more profitable system.

It must be remembered that one of the most difficult problems facing the present Peking government in connection with formulating a national railway scheme that can be negotiated with the consortium, is the tendency of the provinces to revive the demand for autonomy in the construction of railways, a tendency strengthened by General Wu Pei-fu's policy of federalization. A federal government for China would deprive the central authorities of a monopoly over future railway financing, and make difficult the functioning of the present consortium or any other grouping of foreign capitalists. The new cabinet undoubtedly had this situation in mind in issuing the mandate encouraging the building of new roads as an outlet for provincial capital and so satisfy the craving for a share in transportation profits. Once the people and the provincial officials co-operate whole-heartedly in the construction of highways and operation of motor lines, there will be less and less clamor for recognition of their rights in financing the railways. With provincial capitalists confining their energies to road construction and motor transportation, the less profitable railways could with perfect safety be left to the foreigner to construct by means of loans. If Peking could bring about such an understanding it would materially clarify the atmosphere and perhaps facilitate the resumption of negotiations with the consortium.

In order to meet the new conception of government in the early days of the republic, Dr. Sun Yat-sen drew up a plan for financing China's railways based on the recognition of provincial autonomy, in which, because of the inadequacy of the central government's revenues to meet the interest, the loans would be secured by provincial bonds guaranteed as to interest and principal by Peking. Certain provinces are again raising the cry of "provincial rights" with General Wu Pei-fu, supported by many influential foreigners, advocating a federal state, which means in its last analysis, provincial autonomy and jurisdiction over the railways within their borders. With these unsettled questions delaying the unification of the country, by bringing the people into closer communication by means of railways, it is almost hopless to talk about national railway schemes or policies.

In our opinion, the difficulties attached to financing China's railways by means of loans secured by provincial bonds guaranteed by Peking, are insurmountable. It would seem, however, that the provinces might well be satisfied (at least during China's period of reconstruction) with a monopoly of highway building and motor transportation, which could be carried out by local capital, and leave the more expensive railways to be built through the issuance of foreign loans by the Peking or other recognized government.

If, as has been commonly accepted as the truth, the provinces have been actuated in their demands for recognition of provincial railway rights by a desire to participate in the financial benefits alleged to have been monopolized by Peking, a division of activities, whereby they would control the highway and motor transportation within their borders, should amply satisfy their craving and bring to them the most profitable end of the spoils. For, it is now being conclusively proven in all highly developed countries with proper highway systems, that motor transportation is fast crowding the railways, especially in the matter of short hauls, and diminishing their former earnings to a point where the future has become a matter of grave concern to their shareholders.

Motor transportation has not only passed the stage of being an auxiliary or feeder to the steam railways but has entered the stage of active and destructive competition. In the Far East, we have only to look at the situation in the Philippines, where, on the island of Luzon, motor transportation has so seriously undermined the earning capacity of the Manila Railway Company, that protective legislation has been demanded by the railway. This condition is due to the loss of their short haul traffic, taken over and monopolized by the numerous motor bus lines. And this condition will prevail in any Oriental country, where the question of time is of no particular consequence to the native. In other countries, the effect of good highways and up-to-date trucking methods has driven the short haul traffic entirely to the motor transport companies. The huge volume of cotton which formerly was carried by rail between Liverpool and the Manchester mill towns is now entirely transported by truck and the finished product is also handled in the same manner. In the United States, the silk motor truck caravans have taken over the transportation of this valuable commodity between the docks in Jersey city and the mill districts of Patterson.

In England, much of the coal is now transported on trucks. Roads in England and on the continent are good, the distances are short and heavy grades are few. The conditions arre ideal, and with the general use of trailers the costs are below those of the railways. As many as four trailers are now hauled by steam trucks. The railways, while employing trucks for their own deliveries and collections, are being hard hit by a competition that has lost to them the short haul traffic. Another phase of European motor traffic consists in the heavy rails and road bed made necessary by the fast passenger trains, which has greatly increased construction and maintenance costs. These expensive road beds are not essential for the slower moving freight traffic, so the road bed, although the biggest investment, is the least used part of the railway, abnormally increasing freight rates.

All over Europe the motor truck is now not only an essential adjunct to the railway, but it has found a distinct place for itself, to the extent that new conclusions are being formed as to the place of the railway in the national economic system. It may turn out, if developments continue at the same pace as they have since the war, that the railway may ultimately be serviceable only as a special and not a general carrier, and so revolutionize the present ideas of transportation. This conclusion is also being forced home by the rapid development in Europe of air travel and transportation, displacing the railway for fast mail and passenger service.

What is taking place in Europe, to a certain extent in America, and under our noses in the Philippines, will follow in China as new roads are built. Local and short haul traffic between towns and cities will gravitate to the motor truck and omnibus, and the railways will get only the slow-moving, long-haul freight, and through passenger traffic. The cotton and the crops of Kiangsu will be hauled to market and the mill centres by motor trucks and the railway to Nanking and Hangchow will depend more and more upon through goods and passenger traffic. And so, in all other parts of China, the motor truck will open up and develop regions which the railway can never hope to penetrate.

With these conditions before us, militating as they do against any large profits from prospective railways, a situation is created that must be taken into consideration in any estimate of earnings of projected railways, a consideration that may well have an important bearing on loan terms and conditions. It seems fair to prophecy from present indications, that before any extensive railway scheme for China can be financed and the lines constructed, motor roads and transportation will have connected up many of the most important districts embraced within present railway projects. As these profitable highways and motor transportation services will be financed largely from private and provincial sources, it would seem that they might be content with this and concede a free hand to the central authorities to make such foreign loan terms for railway construction as new conditions may compel them to accept.

We can think of no combination that would be productive of more good to China than this, and if conditions so warranted, the establishment of a special sino-foreign bank operating outside the consortium agreement to finance these roads on approved provincial securities issued through and with the added guarantee of sound Chinese banking institutions, the work of the consortium in the development of new railways would be greatly facilitated. If foreigners are to live up to their oft expressed faith in the honor and integrity of the Chinese business man, as opposed to that of the official class, here it seems, is a good place to put into practice what they so loudly preach.

Heretofore, foreign financial assistance in the construction of China's railways has been extended for the purpose of creating markets for railway materials. The world has moved ahead, and the great automotive industries now clamor for similar assistance. In the case of the United States, the automobile industries last year paid in federal taxes alone, the sum of nearly $150,000,000. In return, the American manufacturer of motor vehicles is asking for the assistance of his government in developing foreign markets. The government has responded by creating an automotive division in the bureau of foreign and domestic commerce, and is sending a special expert to Asia to investigate conditions. Such an investigation will bring little practical benefits to the rapidly expanding automotive industries, unless countries like China can be made to purchase more and more of their products. Increased purchases can come only from the construction of new highways, and these must be financed. If the Chinese are unable to finance them alone, some practical plan should be evolved so that American investors can assist in this much needed development. There is no practical way to facilitate this except by relying on the good faith and accepting the securities of prominent Chinese or the sino-foreign banks who could take over provincial or municipal bonds, guaranteed, if necessary, in part, or in whole, by the central government. Such agreements could and would carry with them the provision that the automobiles or trucks employed by the road and transportation companies should be purchased from the country supplying the loan. As with America, so with other countries who manufacture motor vehicles for export.

In the past, too much stress has undoubtedly been laid on the future market for railway supplies in China and too little on the possibilities for the sale of motor vehicles and accessories. If the consortium cannot extend financial assistance to the development of a market for the important automotive industries of their various countries, then some other instrument should be created to take over this important task. G. B. R.

Shanghai-Nanking Profit Certificates

WHEN the £2,900,000 of Shanghai-Nanking 5 per cent. sterling bonds were issued in 1903 to build the railway of that name, subscribers for every £100 bond received one profit certificate which entitled the holder to claim a payment out of the net profits of the railway, the amount allocated to the certificate holders being one-fifth of the total net profits of the line. Naturally it took some time to build the line, and then it did not produce for years sufficient revenue to meet the full service on the bonds. The difference had to be provided by the Chinese government, and when the railway turned the corner and earned profits there were long-drawn-out negotiations to clear up the position as to how the deficiency arising from the working of the early years could be treated. It was finally decided that the deficiency had to be paid back before the profit certificates received a distribution, and in consequence of this it was not until the present year that a distribution could be made upon these profit certificates, the actual distribution being £1 per certificate, which required £29,000, as the number of certificates in existence is 29,000. The market for some time has taken an interest in the certificates, and occasionally there have been some quite numerous transactions, but there is a good deal of mystery as to the figures reported by the line from which the distribution was made. The distribution, we might state, was for the year 1920, and in that year we understand that the surplus profits amounted to $2,259,000, which had a sterling value of something like £326,000. One-fifth of this would amount to over £65,000, but the balance of the deficiency on the working of the line had still to be paid off, and other charges came upon the surplus profits, with the result that the amount divisible on the certificates was reduced to $1,120,000, which gave a sum of just over £29,000, and allowed of the distribution already mentioned. The position now is that the line has a clean slate in regard to the division of its surplus profits, and if net earnings are maintained it is evident that for 1921 the distribution upon the profit certificates should be much more than the one just made. Something over £2 seems quite feasible, and as the certificates stand in the market at about 12 ex div. they offer a rather tempting investment. The Chinese government have the right to purchase the certificates at £20 apiece, and as they had a life of fifty years they can run until 1953 if the purchase is not exercised. If the earnings of the line are going to remain at anything like the level of 1920 it would be a profitable operation for the Chinese government to purchase the certificates, but the holder would be indifferent to this matter, because the revenue is such that it would be preferable to allow them to run for over thirty years than to have them purchased at £20 apiece.—*Stock Exchange Gazette*, October 27th, 1921.

A NEW AVENUE OF SERVICE

AUTOMOTIVE SUPPLEMENT
OF
THE FAR EASTERN REVIEW

AN ASIATIC ORGAN FOR THE ADVANCEMENT OF INTERNATIONAL AUTOMOTIVE INTERESTS

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IN order to keep pace with the rapidly expanding Automotive Markets in Eastern Asia, THE FAR EASTERN REVIEW will publish every other month a Special AUTOMOTIVE SUPPLEMENT devoted to New Road and Street Construction, Automobile, Motor Transportation, Motor Boat and Aviation Developments in this part of the world.

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Tangles of the Times

The Mistake that John Hay Made

WHEN Secretary John Hay in 1898-99 invited the powers to subscribe to the "open door" doctrine and the inviolability of the territory and sovereignty of China, certain very important and vital facts bearing on her status were concealed from him. The existence of the Li-Lobanoff secret treaty of alliance between China and Russia directed against Japan, and certain other important documents defining Russia's privileges and position in Manchuria were known only to an exclusive few in Peking and St. Petersburg. As long as American statesmen and editors refuse to view subsequent events in the light of the confessions of Count Witte, so long will they be unable to understand Japan's position. *The New York Herald* of November 9, in an editorial headed "The Distinction John Hay Made," disclosed a letter written in 1904 by the secretary of state to the editor of *The Sun* in which Hay explained the meaning of his note of instructions dated February 10th, 1904, to the American diplomatic representatives in St. Petersburg and Tokyo concerning the neutrality of China. This note read as follows:

> "You will express to the minister of foreign affairs the earnest desire of the government of the United States that in the course of the military operations which have begun between Russia and Japan the neutrality of China and in all practicable ways her administrative entity shall be respected by both parties, and that the area of hostilities shall be localized and limited as much as possible, so that undue excitement and disturbance of the Chinese people may be prevented and the least possible loss to the commerce and peaceful intercourse of the world may be occasioned."
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> The *Herald* adds:
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> "The purpose and scope and limitations of this effort on the part of the sane statesman who gave to the country and the world the American doctrine of the "open door" were explained three days later in a private note for the information of the editor of *The Sun*. This letter, we believe, is now for the first time printed:
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> "I think you will see there is no dynamite in this and no 'promise or potency' of it.
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> "*We are not forming an alliance with any one*; we are not binding ourselves to any action, immediate or prospective. We are simply trying to get both of the combatants to agree not to drag China into anarchy—a thing to be deprecated by all the world. Yours faithfully,
>
> "JOHN HAY.
> "DEPARTMENT OF STATE,
> "WASHINGTON, February 13, 1904."

The object of the *Herald's* editorial is to emphasize that American policy at that time was identical with that which influenced our participation in the recent war against the central powers; "association and co-operation without alliance." "Suppose," asks the *Herald* "he had proposed a cast iron treaty contract, to which the United States was a party, establishing a joint guaranty of China's neutrality and integrity during and after the war then beginning. That would have been an alliance and a committal on our part to military action, if necessary, to safeguard administrative entity. It would even have been an agreement to engage in war operations, if necessary, to compel China to remain neutral; and what would have been our plight, after having guaranteed China's neutrality, if, through an upheaval of Chinese sentiment unfavorable to foreign participation in her affairs, she should have refused to remain neutral?"

Well, we ask, what is our plight now? Is Count Witte a reliable witness? Did Sazanoff speak the truth about Russia's committments with China? Up to date there has been no denial of the facts so revealed. Viewed in the light of these disclosures, does not John Hay's anxiety about the "open door" in China in 1898 and 1904 tell us that the United States was sitting in a game in which the cards had been stacked by the player we were protecting from being fleeced? Here we were talking about the "open door" and insisting upon the maintenance of the neutrality of Russia's ally, who had secretly created the situation which made the war with Japan possible. The facts should teach Americans not to take too much for granted in dealing with China, for although we can depend upon the straightforwardness of the masses of the people, our altruistic policies designed for their protection are continually set aside and ignored by a group of self-seeking mandarins who have played the game with fifty packs of marked cards concealed up their sleeves.

We repeat, if American editors and statesmen are to continue to ignore historical facts and persist in approaching the Far Eastern problem from the sentimental standpoint of five years ago, before new light was shed on these matters, there can be little hope of ever understanding the viewpoint of Japan or arriving at a proper appreciation of China's troubles.

The Reason for John Hay's Mistake

John Hay's mistake was due to the same conditions that now confront the Pacific conference, the utter absence of any organized or stable authority in China; the existence of a close clique or cliques of mandarins and military chieftains who recognize no responsible head; a loosely-knitted aggregation of boodlers in which each high official takes upon himself the responsibility for compromising the nation in some special deal for his own profit with other powers. As Li Hung-chang cooly pocketed the bribe of Count Witte and secretly affixed his name on the dotted line to a treaty of alliance that he hoped would bring about the downfall of Japan, so, in countless similar instances, other officials have signed away the rights of their countrymen in order to increase their own well-being. Rarely, indeed, has it been possible during the past twenty years to deal with an organized government in China. Such financial deals as have been negotiated invariably have been the private perquisites of the officials concerned, without regard for the higher interests of the country or its people. China to-day faces the conference in the same position, so that many important American newspapers are asking the question, "What is China." The *New York World* answers the question thus:

> "The China that exists, the China whose problems are vexing the conference, is hardly more than a geographical entity whose boundaries are not clearly established. There is no Chinese government that can speak for the Chinese people and act in their name. Nominally there are two governments, which are at war with each other—one in Peking and one in Canton. Whether either of them is a real government capable of performing any of the accepted functions of a government is a debatable question. The actual power in China seems to be in the hands of provincial governors whose allegiance is to themselves and who recognize a central authority only when such recognition happens to suit their purposes.
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> "It is all very well to talk about pledges to respect the integrity of China, but what is the China whose integrity is to be respected? It is likewise well to talk about the 'open door,' but the 'open door' cannot be maintained by foreign influence alone. There must first be a Chinese government that can keep the door open, at least to the extent of not secretly yielding to foreign pressure and making itself the tool of foreign intrigue."

The Times (London) Peking correspondent gives a more accurate answer to the question in an article published in *The Times* of November 11. He says:

> "In effect there are a dozen different governments in China, some entirely independent of each other, some recognizing others and having relations of a kind. Two are formal governments, the others are informal, but none the less organizations controlling large areas of territory without reference to any other authority."

The Times correspondent then goes on to describe the so-called central government at Peking, which operates with a president and a cabinet but without a parliament, whose constitutionality is admittedly irregular, but is upheld by the foreign powers who maintain the fiction that it rules the country. Then there is the Canton government boasting a president, a cabinet and a parliament, but with which the foreign powers will have nothing to do. Then there is Marshal Chang Tso-ling who dominates the Peking government from Mukden, the capital of Manchuria, a gentleman with a record, who has his own foreign office, his own armies and arsenals and rules as an autocrat pure and simple. In Yunnan and Szechuan are provincial governments owing allegiance to nobody. Central China is ruled by General Wu Pei-fu, who was looked upon as the "Hope of China," but who seems to have joined the jolly company of predatory tuchuns, acting independently of Peking and commandeering railway and other revenues of the central government because it failed to remit funds to pay for his campaigns. In various other provinces the military commanders are really independent autocrats, rendering lip-service to Peking but doing as they choose. To illustrate the general situation it may be stated that during the past 15 months there have been four distinct wars in the country, each involving not less than 100,000 troops, in Chihli, in Kwangtung, and Kwangsi, in Hupeh and Hunan and western Hupeh.

Such is China. If it were not for the existence of the consortium and the iron-clad agreement between the international banking groups to refrain from lending funds to China until a stable government is organized and operating, it is safe to say that at the present writing there would not be enough of China's resources and administrative independence left to worry about. The "door" that Americans are so strenuously trying to maintain open would be slammed to, barred, bolted, locked, buttressed and riveted in their faces. Not one of these tuchuns but would hypothecate every available source of revenue and right to obtain the wherewithal to strengthen his position and extend his influence. We have only to read into the many such agreements that have been negotiated during the past few years, culminating in the contract between Dr. Sun Yat-sen and an American syndicate to understand just how much the Chinese mandarin cares about the American doctrine of the "open door" when they are out after the cash for political adventures. This, then, is the China that we must reckon with, as distinct from the China that is held up to our gaze by the western-educated delegates at Washington, and the masses of earnest returned students and merchants who are laboring to give effect to other ideals.

And with these conditions well in mind, the *New York World* concludes a most able editorial on the situation in the following words:—

"The first obstacle that lies in the way of a settlement is the failure of the Chinese people to establish a responsible government that can protect Chinese rights and at the same time carry out Chinese obligations. It is plain enough that before there can be a permanent agreement about any vital question pertaining to the Far East a way must be found to help the Chinese people put themselves on their feet politically. This is no easy task. It cannot be done unless the Western nations are willing to assume responsibilities and also give concrete proof of their good faith.

"They cannot very well insist that Japan must make all the sacrifices. We know very well what our attitude would be if 400,000,000 Chinese without a real government were only a few miles from the borders of the United States and we were dependent on that China for part of our food supply and the raw materials necessary to the very existence of our industries. If we stop for a minute and think of all the fuss we have made about the failure of Mexico to maintain a responsible government we can get a better notion of the attitude of Japan toward a population at least six times greater than her own.

"The test of any Far Eastern agreement at Washington will be the treatment accorded to China, but China cannot be saved merely by stabilizing the loot or arriving at an understanding as to the exact amount of foreign aggression that will be regarded as not detrimental to the interests of the other nations concerned. There must be a geographical China whose integrity is guaranteed, and means must be found to aid the Chinese people in establishing a political China that can perform the functions of government. How far are the nations represented at Washington prepared to go along those practical lines?"

China's Claims at the Conference

IN this hopeless state of disorganization, China presented her claims to the Conference in clear and forcible language.

She asked that all agreements that hamper her freedom and encroach on her sovereignty be abrogated. She wants her territorial integrity respected, foreign customs control and post office control abolished, Shantung freed, Japanese rights in Manchuria defined and limited, extraterritoriality enjoyed by other nations abandoned, foreign troops removed, her neutrality in future wars guaranteed and her national resources left in her own control. In a few words, she wants to run her own affairs, and she wants the system of exploitation and conquest to cease.

These were most ably presented by Minister Sze as head of the Chinese delegation, and embraced in the ten following principles:—

1. (*a*)—The powers engage to respect and observe the territorial integrity and political and administrative independence of the Chinese republic. (*b*) China upon her part is prepared to give an undertaking not to alienate or lease any portion of her territory or littoral to any power.

2. China, being in full accord with the principle of the so-called "open door," or equal opportunity for the commerce and industry of all nations having treaty relations with China, is prepared to accept and apply it in all parts of the Chinese republic without exception.

3. With a view to strengthening mutual confidence and maintaining peace in the Pacific and the Far East the powers agree not to conclude between themselves any treaty or agreement directly affecting China or the general peace in these regions without previously notifying China and giving to her an opportunity to participate.

4. All special rights, privileges, immunities or commitments, whatever their character or contractual basis, claimed by any of the powers in or relating to China, are to be declared, and all such or future claims not so made known are to be deemed null and void. The rights, privileges, immunities and commitments, now known or to be declared are to be examined with a view to determining their scope and validity and, if valid, to harmonizing them with one another and with the principles declared by this conference.

5. Immediately, or as soon as circumstances will permit, existing limitations upon China's political, jurisdictional and administrative freedom of action are to be removed.

6. Reasonable, definite terms of duration are to be attached to China's present commitments which are without time limits.

7. In the interpretation of instruments granting special rights or privileges, the well established principle of construction that such grants shall be strictly construed in favor of the grantors is to be observed.

8. China's rights as a neutral are to be fully respected in future wars to which she is not a party.

9. Provision is to be made for the peaceful settlement of international disputes in the Pacific and the Far East.

10. Provision is to be made for future conferences to be held from time to time for the discussion of international questions relative to the Pacific and the Far East, as a basis for the determination of common policies of the signatory powers in relation thereto.

Although denied by the Chinese delegation, the correspondents of various important newspapers in America and Europe assert that the ten principles were drafted by Ex-Secretary of State Robert Lansing and Ex-Minister Paul S. Reinsch, working jointly as high advisers to the Chinese delegation. These ten points, according to these advisers, were intended to be applied as follows:

1. This proposal is intended to be a reaffirmation of the extent of the territory of China as it existed when formal recognition was made of the Chinese republic in 1913 and an effort to cancel all private agreements wholly Japanese in regard to certain portions of China. Agreement on this principle would prevent China being defined as within the great wall and would give her Manchuria and Mongolia as part of her geographical limits. Sub-section (*b*) is a rider to the first statement and is a pledge on the part of China that she will not alienate territory or lease any littoral and, further, that she will expect every power to support her in this position.

2. China seeks under this head to have the same principles applied in all parts of China, with Manchuria and Mongolia considered as integral parts of China, and wishes to give precisely the same status to all powers in her domain and to abolish the idea of spheres of influence and interest.

3. This principle is intended as a direct assault upon the Anglo-Japanese alliance, the Lansing-Ishii agreement and the so-called secret treaties of 1917 made between the powers without the knowledge of the United States upon the subject of Shantung. This is regarded as the keystone of all the proposals.

4. This principle is intended simply as a call or demand that every agreement or understanding of whatever nature touching upon anything Chinese made between powers shall be declared at Washington, and that here shall be inaugurated open diplomacy regarding the Far East and that hereafter everything shall be known as to the relations and treaties enjoyed by different countries. As an illustration of this, it is suspected by the Chinese that there is a secret agreement between Japan and France regarding the Eastern Railroad in Northern Manchuria.

5. This principle is intended to bring about the revision of all treaties dealing with extraterritorial jurisdiction, and finally to remove the conception that China is a mere treaty territory.

6. This principle seeks to establish another of the things greatly desired by China—tariff autonomy and the right to levy tariff duties on imports the same as any other country. At present China can only impose a tariff of 5 per cent. *ad valorem* on incoming products under treaty agreements, which have been in existence eighty years and have not been disturbed, despite changed conditions and the need for greater revenue. The fact that China cannot increase her tariff duties, the Chinese delegates assert, has prevented her going ahead in many ways, even though it gives equal opportunity to all countries.

7. As to the principle laid down in this proposal, the contention is set up that China should have the same powers in regard to her railroads, mines and concessions generally as obtain in all Western countries, and when circumstances arise the universal world practice shall be followed in favor of grantors. In effect this principle is intended to eventually give China the control and ownership of her railroads.

8. This is intended to serve notice on the world that China shall expect the powers to preserve her neutrality in a war in which she is not a part. This principle is inspired by the action of Japan in not observing the war zone laid down by her when Japan landed forces in Shantung and prosecuted military operations against Kiaochow in 1915 when Japan declared war against Germany. Instead of operating in the war zone the Japanese sent military forces first to Weihsien, which was outside the war zone, and to Tsinanfu, the capital of Shantung, thus occupying the whole line of railway to the capital. Tsinanfu is 256 miles from Kiaochow.

9. Proposes an arbitration commission to deal with the Far East similar to an agreement made between the United States and Great Britain in September, 1914, for the creation of a peace commission.

10. This principle is self-explanatory and calls for conferences from time to time to discuss international questions relating to the Far East.

From one point of view these principles constituted a challenge of the part of China to the good faith of the powers and means, and as the *Brooklyn Eagle* points out, "France and England as well as Japan must surrender certain privileges they enjoy and have long enjoyed, that the fruits of iniquitous wars in the past, as well as of iniquitous bargains must be surrendered to their real owners. The demands made by China will be hard to reject, the arguments she advances difficult to answer. The sympathy of the United States will be with the Chinese." From another viewpoint these ten principles so equitable and just on their face will not stand close scrutiny in the light of actual facts. The explanation given to Clause 1 by the high adviser to the Chinese delegation loses strength when it is recalled that at the time the Chinese republic was recognized in 1913, Mongolia had been a free state for over a year and a half, and ignores completely the part played by Japan in restoring Manchuria to China after the latter had practically surrendered all authority to the extent that Russia intended to turn it into a closed state like Bokhara or Turkestan. It loses sight of the further important fact that the independence of Mongolia proclaimed in 1911 was to have been employed by Russia as the means of extending her strategical railways for the further conquest of China and renew the conflict with Japan.. The less China and her advisers have to say about Manchuria and Mongolia being at all times an integral part of the Chinese nation, the better, for the statement stands, defying refutation, that her sovereignty over these territories, such as it is, has been upheld and saved to her by Japan after she had surrendered them over to Russia in order that the latter might more readily crush Japan.

Naturally, with such palpable contradictions brought before the conference, the questions which obsessed the delegates more than anything else were: "What is the 'open door?' " "What is China? " "What is it that China wants ?" "Who is menacing her integrity ?" To reiterate the hackneyed accusation that Japan is the one predatory power encroaching on China's integrity, after she has saved and returned these territories to her and stands compromised to the maintenance of her sovereignty and the operation of the "open door" doctrine in these identical regions, seems like repeating the error of Versailles in trying to convert the conference into a court for the trial of Japan.

Japan's Cards on the Table

THERE would be little use in analyzing all the ramifications of the ten principles advanced by China as a solution to her problems, as the big issue as far as the conference is concerned, centres in Japan's claims in Manchuria and Mongolia, and here we must give close attention to the policy of Japan as outlined by Baron Shidehara to the correspondent of the *New York Times*. The main features of the Japanese position relative to the problems before the conference are set forth as follows :

1. The free and peaceful development of the commerce of Japan, the United States and other nations in the Pacific.

2. Support by all pacific means of the independence and integrity of China and the privilege of equal opportunity and the open door for the commerce and industry of all nations in that country.

3. Withdrawal of Japan's forces from the leased territory at Kiaochow, in the province of Shantung, on a basis which Japan hopes will be satisfactory to Great Britain and the United States and fair and acceptable to the Chinese.

4. Neither the annexation of nor a protectorate over Manchuria, but recognition of the principle that Japan has special interests there, based on considerations of propinquity, vast railway and other investments, and the considerable Japanese population that has penetrated into the region along the railway from Dairen to Changchun, these special interests being regarded by Japan as heightened by the fact that Manchuria stands in the path of possible future Russian aggression against Japan.

5. The open door and equality for other nations in both Manchuria and Siberia.

6. Neither annexation nor protectoral control of Siberia, but recognition of the principle of peaceful penetration of Japanese into that region for purposes of trade and commerce, to obtain raw material, and sell Japanese surplus manufactured products.

7. Withdrawal of Japanese forces from Siberia as soon as there is organized in the Russian Far Eastern maritime province and Siberia a government qualified and able to stabilize conditions, and in particular to afford protection to Japanese settlers, fishermen and other subjects of Japan resident there.

8. The hope and expectation of the Japanese that when Japan withdraws from the leased territory of Kiaochow and Tsingtao, the British will also withdraw from the leased territory of Wei-hai-wei, which is likewise in the Chinese province of Shantung.

9. The acceptance by China of the new international four-power consortium, in which the present participants are American, British, French and Japanese banking groups, with the object of negotiating and carrying out Chinese foreign loan business and assisting China in the establishment of her great public utilities with the co-operation of Chinese capital, but with consortium control and supervision to insure correct expenditure of foreign loans and to eliminate the possibility of the money being wasted or misapplied through corruption.

10. The stabilization generally of financial, economic and political conditions in China with a view to closer commercial relations between China and the outside world, China being regarded by Japan as one of the main sources of raw material sorely needed by the Japanese and as a market in which to dispose of Japanese manufactured products, without exclusion of or discrimination against other nations desirous of developing business and commercial relations with the Chinese.

11. The maintenance of the *status quo* in the Dairen leased territory and of the Japanese leased zone along the South Manchurian Railway.

12. Less concern over the renewal of the Anglo-Japanese alliance, which is not regarded as being so vitally necessary in view of the pronounced tendency of the Washington conference toward an agreement for sweeping reduction of naval armaments of the three leading naval powers.

13. Solution of the Yap question and the problem of trans-Pacific communications on a basis satisfactory to the United States and Japan and with the endorsement of the other governments interested in Pacific communications.

Thus did Japan reiterate and emphasize her oft repeated declarations defining exactly what she wants in Manchuria and Mongolia, a policy forced upon her by the attitude of other nations whose doors are closed to her people, compelling them to remain at home and seek their future on the Asiatic mainland. In other words, Japan says to the world, "we want a chance to live peaceably and exist honorably by a recognition of our special strategical and economic necessities in regions which we have saved to China at the expenditure of rivers of blood and treasure. We do not ask that China surrender one iota of her sovereignty, other than that which she willingly parted with in the South Manchuria Railway lease to Russia. This we must retain because of the fact that Manchuria stands in the path of possible future Russian aggression against Japan, and China is too disorganized and weak to guaranty her neutrality."

Naturally, Japanophobe Chinese and their American advisers, whose one-sided diplomacy created many of the issues the conference is now called upon to disentangle, see even in this explicit declaration of Japan, a hidden threat against China's future integrity and are moving heaven and earth through propaganda to create the impression that Japan is seeking to amputate these regions from the rest of China proper. It is inconceivable that Japan would go before the conference seeking to infringe either the sovereign rights of Russia or China, and the imputations of bad faith hurled against the Japanese are most untimely, certainly injurious and unjust.

Dr. W. W. Yen, China's foreign minister, hastened to declare the attitude of his government in an article published in a local weekly, and his views were accepted as meaning that China, as a last resort, will accept partial financial control, preferably by a Chinese foreign budget commission, but that she will never consent to Manchuria's alienation from the remainder of China.

Mischief Makers Busy

The mischief-makers lost no time in getting on the job, and we find ex-Minister Reinsch rushing to the front (page of the newspapers) to again warn the American people that war is inevitable. At the annual dinner of the Society of Colonial Wars, held in New York, referring to Japan's "obnoxious activities" in China, Dr. Reinsch indicated that America should prepare for war in the event the Far Eastern problems were not disposed of at the conference, adding that the Chinese rely chiefly on America to see that they get a square deal. Dr. Reinsch probably overlooked taking the audience into his confidence that he was one of the high advisers to the Chinese delegation and that her case, according to well-informed correspondents, had been drawn by jointly by him and

Mr. Lansing. In other words, unless the United States adheres to the policy laid down by Dr. Reinsch and ex-Secretary Lansing who created many of the issues through their man-handling of American diplomacy during the war, we must fight Japan. A little congressional investigation into the diplomacy of Minister Reinsch during his incumbency of office at Peking might reveal to the American people very good reasons why he should explain the raising of issues at a time when the nation was in no position to support him.

It is easier now to understand the inside working of the clique who hoped to manœuvre the United States into a position where war with Japan would become inescapable, in order to give effect to their conception of American policy in China. We can go back to the days of the Paris conference, where the chief American expert, on hearing of the Shantung award, is alleged to have declared, "THIS MEANS WAR." Mr. Millard, who disclosed this undiplomatic break, was accompanied to Washington by Mr. Eugene Chen and other young Chinese, who lent their energies to supporting Mr. Millard in his declarations. We mention Mr. Chen at this time, because he has recently produced further evidence that the Chinese and their Japanophobe friends seriously consider these matters as a war issue between Japan and America, mind you, not between China and Japan, but Japan and America, and, if by any chance, Americans fail to recognize this and permit Japan to have her way, then, in due time, China and Japan will fight us.

The Pan-Asiatic Bogey

MR. Chen, as the representative of the southern government at Canton, has contributed some highly interesting and enlightening articles to the local press about the issues at stake between North and South China, and although we heartily sympathise with many of the principles so ably expounded and would wish with all our heart to see his ideas realized, yet we must take issue with that part of his arguments which advocates American naval power as a factor for China's security. In elucidating the Pacific question, Mr. Chen breaks his argument into a series of numbered statements, viz. :

(1). Japan frankly claims that her territorial expansion is a national necessity in order to secure room for her surplus population.

(2). It is admitted that such room is available in Australia and in America. But certain considerations of high policy forbid the entry of Japanese immigrants into those lands.

(3). Hence, the thesis which insists that the existing *status quo* in the Pacific shall be fundamentally altered in favor of Japanese emigrants.

(4). It is believed that such a solution of the Pacific question could only be effected by a Japanese victory in a war with America.

(5). It is plain, however, that Japan could not vanquish America if she had to rely on her own resources. But it is equally plain that she could do so if Chinese man-power and Chinese natural resources were at her command. China exceeds Europe in area, population and, probably, natural resources. Hence, the *raison d'etre* of Japan's policy in China.

(6). It is also a term of the argument that Japan's real aim is masked in the contention that she seeks in China only room for her surplus population and the raw materials without which her industries would perish. But intra-mural China is over-crowded, and the conditions of life in extra-mural China—Manchuria and Mongolia—are not suitable for genuine Japanese, as distinguished from purely political, colonisation in those regions. As regards raw materials, these are and will always be available to Japan through the ordinary channels of international trade and commerce.

(7). These considerations, therefore, seem to support the view that Japan's policy in China aims at the domination of China with her man-power and natural resources in order to enable Japan to force open the gates of Australia and America to Japanese immigration.

Here we have in plain words from one of the foremost Chinese writers of the day, a clean confession of China's weakness, an admission that his countrymen, once disillusioned of the idea that the United States will act as their guardian, will ally themselves with the Japanese for forcing open the doors of America and Australia to Chinese and Japanese emigration. This argument tells us in no uncertain language that the Japanese are not wanted in China under any consideration, and we come back to the question of where are they to go, how are they to live ? If all the other countries bordering the Pacific close their doors to the Japanese and Chinese, and China insists that her neighbors cannot enter her domains, and the Japanese keep on increasing, then we arrive at precisely the situation we have tried to impress upon Americans. If the Japanese are barred from freely entering Asia through the hostility of China in territories that Japan has saved for her, and she is strong enough to make it stick, then some day the racial issue will be forced over the Pacific for the boys of America and Canada to settle, and that day will find China solidly lined up on the side of Japan. In other words, the policies of Russia and China would force the racial issue which belongs in Asia over to the shores of America, and if Americans insist upon having the question settled where it rightfully belongs, then China will permit herself to be led by Japan and retaliate by forcibly opening our doors to the hordes of Asia. According to these thinkers there is no escape for America. Willy-nilly we must fight Japan or a Japanized China will some day get us if we don't look out.

China's Threat to America

Chinese writers who flaunt the Pan-Asian bogey to scare Americans only make the case worse for themselves, for if present-day talk carries any weight, the first thing a militarized China would do would be to throw out their Japanese overlords and square accounts with Russia, and here they would have all they could attend for a generation or so without planning to force open doors thousands of miles away over an ocean guarded by the fleets of the white races. As long as America, Great Britain and France retain supremacy of the seas, we will lose no sleep over the arguments advanced by Mr. Eugene Chen to frighten Americans into becoming China's permanent guardian. Dr. Wellington Koo and others tell us in one breath that the future peace of the world depends upon a strong China, whose people with their pacific tendencies can be depended upon to do away with militarism and wars of aggressin, and in another breath we are told by equally prominent Chinese, that if America don't protect them against Japan, then, we must accept the consequences.

Mr. Chen, as spokesman for the Chinese who insist that America must fight Japan (an opinion also shared by his colleague, Dr. Ma Soo, the Canton delegate at Washington) insists that a mere limitation of armaments, especially American naval power, cannot solve either the Chinese or the Pacific problems, for then Japan's ability as the greatest military power in Asia to prosecute her policy of ascendency in China would be increased, not diminished.

"On this view" says Mr. Chen, "America would be faced with the political paradox of working the gravest injury to China whilst genuinely trying to assist her. But it would not be the first time. That paradox was seen in the Knox scheme of railway neutralisation in Manchuria ; and it was repeated in the policy which brought China into the great war and sacrificed her at Versailles. And the same paradox will reappear so lung as it is not realized that the future of China is a vital—not an altruistic—concern to America.

"If the future of China is rightly envisaged as a vital American interest, you will see the cogency of the related view that a limitation of American armament must be supplemented by the strengthening of some internal stabilising force in China unless the intervention of America is to worsen the present grave state of the country.

"In terms of practical politics, such a stabilising force must take the form of a national government."

Quite right. But who is to undertake the task of stabilization ? What shape should this intervention take ? The future of China is primarily a vital Chinese interest, and if this is to come from some stabilizing force from the outside, which faction in China is to be supported ? Can foreign nations be expected to do something for the Chinese they are incapable of doing for themselves, and if so, can any one foreign nation, especially America, take on its shoulders such a herculean task ? Mr. Chen is advancing a strong argument for intervention, a plea to give practical effect to that phase of the Hay doctrine so forcibly outlined by Minister Schurman in his Peking speech. Here we have the spokesman for one element of Chinese political life advocating a policy strenuously opposed by other equally important elements. If such a proposal was seriously advanced by a foreigner, the Chinese would come together as a unit to repudiate it, as happened at the very outset of the conference, when it seemed that such a solution might be urged on the delegates. If China is to be preserved as a national entity and a stable national government created in order to offset the decrease in naval armaments and provide a military check upon Japan, then the job is one that the United States could not undertake without inviting the very thing that the conference was called to avoid. In other words, the argument remains that the only salvation for China consists in the United States going to war with Japan. It is a remarkable fact that all the Canton publicists are a unit on this point. It would seem more practical, that the stabilizing of China should be a task for all the interested consortium powers, who would have to undertake definite responsibilities and obligations, financial in the beginning and not impossibly political in the end. The United States would never undertake this job alone.

"Sold to Japan"

THE mere fact that an American differs from these radical Chinese views or challenges the American Japanophobes who carry out their propaganda, brings upon him the charge of having "sold out to Japan." The Chinese have become so accustomed to being told that America will fight their battles for them, that any deviation from this solution to the question is denounced as anti-Chinese and unpatriotically American, and efforts have been made to discredit whoever dared to run counter to the ideas of the inner ring dictating American policy in these matters. This phase of the intrigue to railroad the United States into a war with Japan would make extremely interesting reading for the people of the United States, could all the facts be correlated and placed before them. The audacity of these mischief-makers was again witnessed when the report was circulated early in the conference that the "United States had sold out to Japan," simply because the level-headed people of America were asking embarassing questions about the inner facts of the controversy between China and Japan and seemed for once to extend a little sympathy to the latter country in her dilemma. Needless to add, that the Washington authorities immediately served notice on certain Chinese at the conference that such tactics on the part of their numerous publicists was resented as an insult. We have heard no more about America selling out to Japan. This is simply another angle of the campaign designed to compel the United States to fight Japan, made possible by such diplomats, who like Dr. Reinsch and others in the service of Peking or Canton insist that war is inevitable unless the nation supports them in solving difficulties they were largely responsible for creating. No wonder, that when such high representatives of a former administration talk in this strain and permit themselves to be quoted, and predict on the speaker's platform that war will happen within ten years, and American publicists in the service of China boast that they will bring this war about, that the Chinese and the ordinary American man-in-the-street began to believe that this was the only solution.

"Discrediting" Lamont

IT is a matter of congratulation, however not only for China but the rest of the world, that the Pacific atmosphere is being cleared, and as the mists of misunderstanding are blown away by the clean air of truth, Japan is revealed to Americans in a light which compels sympathy and respect. The personalities of the mischief-makers are being disclosed. The trick of abusing and impugning the integrity of everybody who disagrees with them is reacting like a boomerang upon China's foremost advocates. The attempt on the part of Mr. Lennox Simpson to place in question the integrity of J. P. Morgan & Company in the matter of the German Hukwang bonds has left a bad taste in the mouth of Americans, and there is talk of a congressional investigation. It is a pity that such an investigation into the conduct of our affairs in China could not have been ordered two years ago. The present conference might not have been necessary. That, however, is another story. Mr. Simpson, as one of the advisers to the Chinese government, alleged that J. P. Morgan & Co. sought to make the payment of interest on the German Hukwang bonds contingent upon the negotiation of a new loan of $16,000,000 to redeem the principal and interest on the loan due the Continental and Commercial Trust Company of Chicago, which matured on December 1st and was defaulted by the Chinese government. The Chinese delegates at the conference confirmed the statements made by Mr. Simpson and supplied further details of the way the German issue of Hukwang bonds came into the hands of American bankers. It was stated that all the bonds the American group and Mr. Lamont are alleged to have demanded payment upon were traced directly to German sources by the Chinese government, and shown, according to them, to have come into the possession of J. P. Morgan & Co. after China declared war against Germany and repudiated payment on the issue.

It was asserted that $250,000 of the bonds, said to have come into the hands of J. P. Morgan & Co., came directly from the Duchess of Luxemburg and that the rest of the $3,000,000 came to America from Scandinavian banks. These banks were said to have obtained the bonds from Germany in payment for war materials furnished that country.

Such a story emanating from official Chinese sources struck not only at the integrity of the American group, but at the consortium as a whole, and brought forth an immediate and vigorous denial from Mr. Thomas W. Lamont, the chairman of the consortium and head of the American group. Mr. Lamont's answer is given herewith in full:

"The intimation that the American group made it difficult for China to obtain a loan in the American market is unqualifiedly false. On the contrary, the American group, though not directly concerned or interested in the loan that fell due on November 1, made the most strenuous endeavors to assist China to meet its maturity.

"There was no particular reason why the American group should undertake to lend money to China in order to take up its outstanding loan, for the consortium was originally established not for the purpose of looking after China's current obligations, but rather in order to furnish to her from time to time as she might require them fresh funds for actual constructive purposes, such as currency reform, the building of railways, etc. Because, however, word was received from Peking to the effect that the government might have difficulty in meeting its nearby maturities, the American group endeavored to formulate a plan whereby such maturities would be cared for and sufficient funds advanced to China to enable her to remedy her failure months ago to pay the coupons upon certain of her outstanding Hukwang railway bonds.

"These bonds had been originally issued in Germany, but had apparently even before the great war fallen into the hands of innocent holders in other countries, and China's failure to meet the coupons as presented by those innocent holders had resulted in injuring her credit here; so the American group felt that any new issue would be more than doubtful of success unless funds were provided to enable China to cure her default. The intimation that these past due Hukwang coupons constituted a claim on the part of our firm is entirely without foundation, as neither we nor, so far as we are aware, other members of the American group are holders of these bonds."

Mr. Simpson, in his zeal to aid China made the same impression in the United States that he did in England, where, according to press reports, the British government requested that his activities be curtailed. His attack upon J. P. Morgan & Company is declared by American bankers to be inspired by a desire to arouse China's opposition to the consortium and in doing so, he deliberately ruined China's credit in the American investment market at a time when she is in desperate need of money with which to rehabilitate herself. On the other hand, it is easy to see that this attack on the integrity of the most influential American banking house is in line with other attempts on the part of China's propagandists to besmirch the character of and impugn the motives of any American who has a good word to say for Japan. In the eyes of China's advocates, Mr. Lamont has been the greatest obstacle to the success of their campaign, by his open advocacy of co-operation with Japan. "Pressure must be brought to bear on these highly placed Americans who adhere to this policy, in order to compel them to modify their views," we were informed in Peking. Perhaps Mr. Simpson sought to apply the pressure, and offset the strenuous efforts of Mr. Lamont, Judge Gary and others to clarify the atmosphere.

The Boomerang

IF so, the attempt failed for only a week after this episode, Mr. Lamont had occasion to once more challenge the veracity of the Chinese propagandists who insist that war is inevitable and that Japan is seeking to establish her supremacy in Asia irrespective of the rights of all other nations. This opportunity came at a huge banquet attended by over 800 people, given by the Japan Society in New York to the members of the Japanese business men's party then in that city. After emphasizing the point that business men and bankers do not profit from war and its preparation, he sent this solid shot into the cohorts of armageddon:

"There are on both sides of the Pacific mischief-makers, and it is our business to thwart such people and such newspapers as breed suspicion and envy and rancor and fear. We here of the Japan Society take it upon ourselves day by day and year by year to correct misstatements and misconception as to Japan.

"We deny that the Japanese people desire to conquer Asia. We deny that they will fight to dominate the Far East. We assert that they are a peace-loving people, of noble tradition, living in a bountiful land, themselves imbued with ideas of beauty and art and earnestly desirous of cultivating their civilization free from warfare and strife."

This gives the direct lie from the most prominent American banker and his business associates to the pernicious campaign that has been waged since the Versailles conference to manœuvre the United States into a position where war with Japan could not be escaped. It is the answer of sober-minded America to the paid clap trap of the clique that would plunge America into hostilities in order that it may maintain prestige and position with its Chinese paymasters. It carries the message to Japan that there exists in the United States a strong and influential element who will oppose to the utmost the damnable propaganda that war rather than co-operation is to be the climax to our misunderstandings. No honest man could impugn the good intentions and sincerity of the Japanese business men who responded to Mr. Lamont's declaration of good will.

Replying to the warm welcome extended to him and his associates Dr. Dan of the great Mitsui firm said:

"We are exceedingly anxious that your judgments should not be influenced or led astray by the propaganda of mischief-makers. The mutual prejudices created and held for centuries in the mind of peoples should now be dispersed and we all, Westerners and Easterners, should meet on the common ground with reciprocal confidence and hearty goodwill."

The differences between Japan and America are shallow, the voices which whisper of trouble are weak. Ex-Secretary of Commerce Redfield said in urging closer relationship between the countries. Baron Nakashima, Manzo Kushida and Umekichi Yoneyama and other speakers explained their mission to be one of furthering better understanding and closer relationship and then begged of the American business man to seek to comprehend their good intentions.

Japan Asks for Justice

ASKED to cite the greatest difficulty to good understanding among the nations, Prince Tokugawa of the Japanese delegation to the Washington conference replied promptly and specifically:

"Ignorance. Lack of information. We should have more of you newspaper men traveling back and forth."

This is the kind of talk that is winning the American people over to a more sympathetic understanding of Japan's problems. Japan courts publicity. She laid her cards fairly on the table and presented her case briefly in the points laid down by Ambassador Shidehara. Japan does not want to annex Manchuria or Mongolia, she is willing to meet China fairly on the disposition of the Shantung railway. Her requests simmer down to a simple recognition of her sacrifices in preserving Manchuria to China at a time when China had surrendered her sovereignty to Russia. She does not ask for special privileges in those regions, but she does expect that these lands will be opened in some way to international development so that her people may find opportunities for their excess energies and assure to them the raw materials that will permit them to exist in their own country, and not force them to adopt race suicide when other peoples are permitted to increase, multiply and colonize vast waste spaces they have stolen from others. Mr. H. G. Wells, the eminent English writer, submits in one of his articles that "the troubles arising from excessive fecundity within a country justify not aggressive imperialism on the part of that country, but a sufficient amount of birth control within its proper boundaries." Fine! for any people who have the unlimited right to chose their home in any country or clime under the sun! Excellent! for those who have appropriated unto themselves the great vacant spaces of the world and hold them closed to others, but to deny the right of Japan to find homes for her surplus millions in Eastern Asia in lands they have preserved to the Yellow Race, and then place obstacles in their way of obtaining the food and raw materials necessary for them to exist at home, is condemning a nation to death, an invitation for Japan to commit suicide.

Mr. Chen says "that as regards raw materials these are and will always be available to Japan through the ordinary channels of international trade and commerce." But when Mr. Chen and his friends determine that America will not fight their battles and the Chinese again find some excuse to boycott Japanese goods, what assurance has Japan that her vital economic interests will be respected in Manchuria and Mongolia. What guaranty can Japan be given that food supplies and raw materials from the nearby regions of Manchuria so necessary for her existence will not be stopped through some future student agitation in which those who now talk so glibly about the free channels of trade and commerce, would be the first to obstruct the unrestricted interchange of commodities?

Is Japan Justified?

IS Japan justified in her stand regarding the vital economic importance of Manchuria to her national existence or is this simply a camaflouge argument advanced to conceal aggressive and imperialistic designs as alleged by Chinese writers? Whenever Japan has a short rice crop and is compelled to import heavily from other rice-producing countries, who are the first to accuse her of taking the food out of their mouths by purchasing on the open market her necessities? The Chinese. Who does not recall the recent hullabaloo indulged in by Chinese writers in America accusing Japan of buying up their stores of rice at exorbitant prices at a time whem millions of their own people were starving? Who does not recall that every now and then the export of cereals is prohibited in China? Where then, in the event of a great food shortage can Japan turn for her staple food? Mr. K. K. Kawakami in explaining this necessity of Japan, tells us in the December *Review of Reviews*, that

> "Driven by necessity, the Japanese have been cultivating their lands so intensively that the law of diminishing return has long since begun to assert itself. Even the most painstaking application of fertilizing process cannot stay the operation of this natural law. To-day the soil of Japan is no longer capable of feeding its own population. Alarmed by this condition, the Japanese government a few years ago conducted an investigation into the possibility or impossibility of extending the area of farming land. The result of this investigation was disappointing. In a word, the country offers no new land that can be opened for farming purposes."

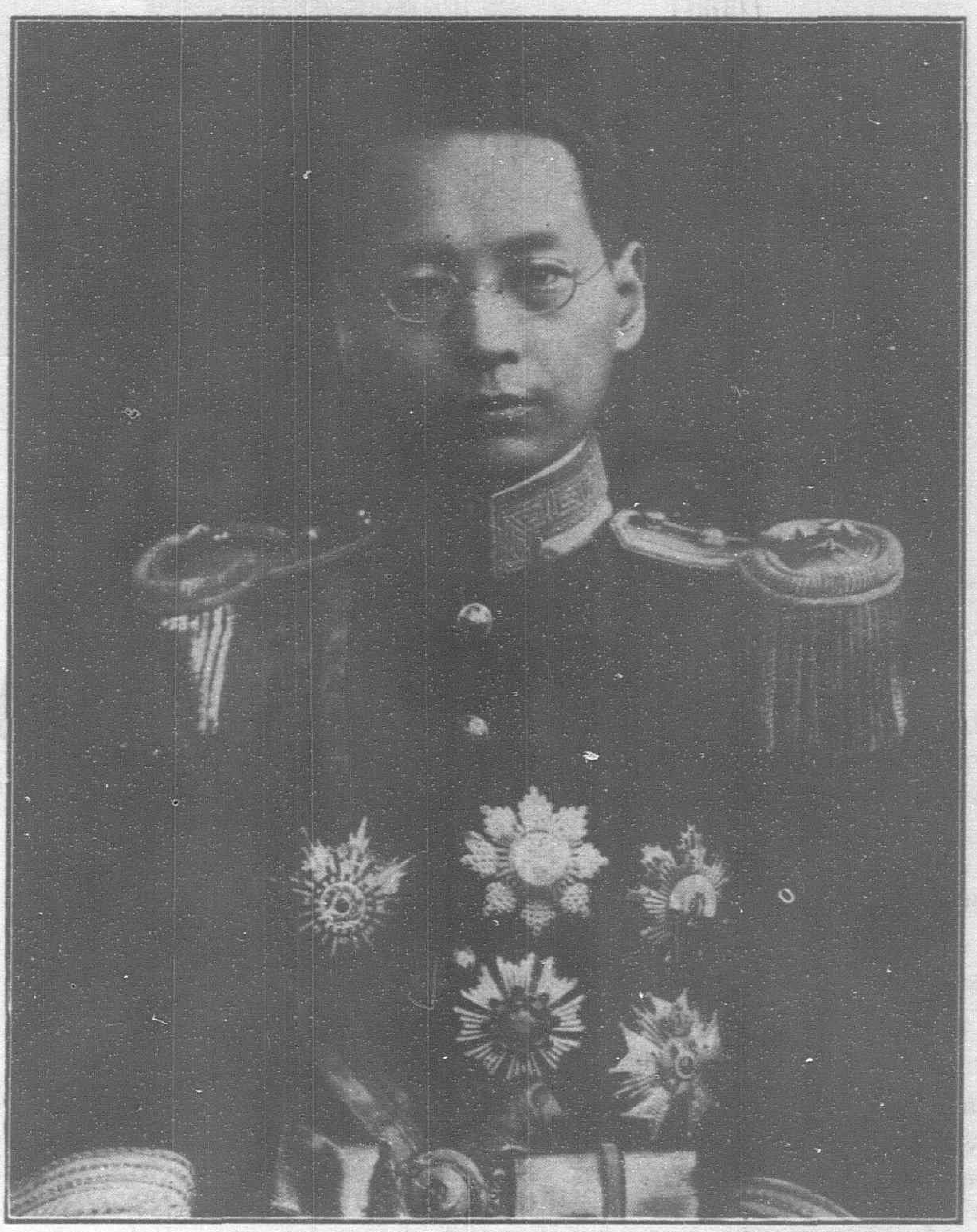
Mr. Kawakami might have added, that the decreasing productivity of the Japanese farm is maintained as it is by the excessive use of fertilizer imported fron Manchuria. The bulk of the great bean cake exports of this territory go to Japan for use as fertilizer. Deprive the Japanese farmer of this cheap commodity, and he will be compelled to purchase the higher priced products with a corresponding increase in the cost of his staple crop. Aside altogether from all other Chinese products, any interference with the steady export of Manchurian bean cake to Japan, spells disaster to the Japanese farmer, an increase in the cost of living for the masses.

Is Mr. Kawakami correct ? Where then can Japan hope to obtain a cheap and readily accessible supply of food for her increasing millions ? From China with its frequent prohibition of rice exports ? Hardly a safe reliance for a nation of 70,000,000 people. What is the answer ? Manchuria is rich in wheat, which the Japanese are trying to induce their own people to eat as a substitute for, or a supplement to, rice. The movement is meeting with some success, but Japan has still to buy yearly large quantities of rice in foreign countries, particularly from French Indo-China.

The Japanese hope some day to make Harbin the Winnipeg of the Far East and to carry down to the sea, over the South Manchuria Railroad, the products of Manchuria and adjacent Siberia.

Japan hopes to teach her people to eat wheat and meat instead of fish and rice and these necessities can only come to her people at prices within their reach, from the nearby lands of Manchuria and Mongolia. If we try and visualize Japan's problems in the light of current Chinese antagonism, can we blame them for insisting on some solution that will keep open the door of these regions for the constant egress of food supplies and raw materials upon which the very life of Japan depends ?

H.E. Liang Shih-yi
China's New Premier



H.E. Yeh Kung-cho
China's Minister of Communications

CHINA'S NEW CABINET

The Chinese political wheel has turned once more bringing the old Chiaotung (Railway) group into power again, with Mr. Liang Shih-yi as Premier of a cabinet backed by Marshal Chang Tso-ling and acquiesced in by Marshal Tsao Kun. It is too early to venture an opinion as to the ability of the new cabinet to steer the government over the financial rocks of the Chinese New Year and pay salaries to officials and troops. When everything looks darkest in China's finances, somebody comes through with a few millions that enables the government to hang on and save its face until more juggling becomes necessary. Liang Shih-yi is China's most accomplished financial expert.

Mr. C. R. BURKILL,
Chairman of the Shanghai Automobile Show

The Shanghai Automobile Show

THE automobile dealers of Shanghai and the manufacturers so ably represented by them are to be congratulated on the success of their first effort to hold a show in the Far East, which proved to be equal to many held at home where every convenience is afforded to facilitate exhibits. The success of this first show has started others talking about a big industrial or engineering exhibit. This came as a natural sequence to the many exhibits of machinery and accessories that somewhat modified the character of the automobile show. As was to be expected, the show was international; all types and makes of cars and accessories being displayed. It is not our purpose to dilate on these features as they have all been fully covered by the local and other papers, contenting ourselves with a brief description of the various stands and exhibits.

No description of the show, however, would be complete without an acknowledgement of the valuable services of those who made it possible and lent their untiring energies to bring success. Those responsible for the exhibition are: Mr. C. R. Burkill, chairman; Mr. M. W. Buck, treasurer; Mr. Joseph J. Keegan, hon. secretary, and Mr. Arthur West, manager.

The executive committee are: Messrs. F. P. Bills (Hudford Motors); M. W. Buck (China Mutual Trading Co., Ltd.); C. R. Burkill (A. R. Burkill & Sons); G. W. Chandler (Dunlop Rubber Co. (China), Ltd.); Leon Friedman (China Motors, Ltd.); P. W. Giovannini (H. S. Honigsberg & Co., Inc.); A. H. Hallam (Vacuum Oil Co.); H. O. Hashagen (Standard Oil Co. of N. Y.); F. Wells Henderson (Inniss and Riddle (China), Ltd.); H. S. Honigsberg (H. S. Honigsberg & Co., Inc.); Joseph J. Keegan (Motor Insurance Loss Assessor); S. C. Lee (Lee and Lee Garage, Ltd.); W. S. Leonard (U. S. Rubber Export Co., Ltd.); Ph. Osterberger (Grand Garage Francais); S. W. Pratt (Shanghai Horse Bazaar and Motor Co., Ltd.); R. R. Roxburgh (John I. Thornycroft & Co., Ltd.); R. T. Ryton (The Auto Palace Co.); E. J. Surman (Jardine, Matheson & Co., Ltd.); C. J. White (The Central Garage Co.); K. Y. Yao (Wah Chang Trading Corporation) and George Wilson (The Asiatic Petroleum Co. (N. China), Ltd.)

United States Rubber Company

STAND No. 1.

It is superfluous to describe in detail the many varieties of tires manufactured and exhibited by this great American company, the largest of its kind in the world. It is, however, of interest to China automobile and truck owners to know that this company maintains its own special representative in Shanghai, working with the Shanghai Horse Bazaar & Motor Company, Ltd. in order to carry out the manufacturer's idea of service, especially in the matter of assisting truck users to select the proper tire for each particular use. The United States Rubber Company were quick to sense that truck users were coming to realize that tires have a very important part in successful truck operation, and that the tires are a separate problem from the truck itself. It has been hard to get sound advice regarding tires. It has not always been easy for a tire manufacturer to advise the use of some kind of equipment which he did not himself manufacture.

Take, for instance, the subject of pneumatic truck tires. The advice regarding the use of these tires has been both confusing and incorrect in nearly all cases. Many a truck owner has learned by expensive experience that the pneumatic has a clearly prescribed field, and that the use of pneumatics outside this field means the waste of money. As much money is wasted to-day they contend, on wrong tires as on poor ones. Some truck owners wonder why their tire bills are so high while others are moderate. The answer is to be found in many cases in the fact that the wrong type or the wrong size of tires has been selected.

The uses to which trucks are put are so varied and the types and sizes of tires so numerous that it is a very easy matter to select the wrong tire for some particular kind of haulage.

In the interest of greater economy, the United States Tire Company has established a technical service department, made up of tire engineers, which will give impartial, disinterested advice to everybody engaged in truck operation. A full statement of any tire problem from any truck operator in the world will bring a detailed reply from the department or its representatives giving the latest scientific information on the points involved. Making a complete line of tires, the company favors no type above another. As the largest rubber company in the world it has a large staff of chemical and engineering experts which is made available to the truck operator through the technical service department.

"We intend that the technical service department shall be used freely by every person who owns a truck," says C. K. Whidden, manager of truck tire sales of the United States Tire Company. "Whether an owner is a patron or not makes no difference, all our facilities for correct information are at his disposal.

"If some large user has a number of hard knots for solution, we will be glad to have an experienced engineer visit him for several days if necessary in order that his problems may be satisfactorily solved.

"Nearly half of the trucks of the country are operating on the wrong kind of tires. This is a condition we hope to correct."

Along these lines the representative of the United States Rubber Company in China and their other agents throughout the Far East, expect to be of service to truck users, irrespective of the make of truck they are using.

Shanghai Horse Bazaar & Motor Co., Ltd.

STAND Nos. 2, 3, 4

This company features the Rolls-Royce, Studebaker, Fiat and Maxwell cars. The Rolls-Royce limousine on exhibition is undoubtedly one of the finest cars on the floor. The chassis was shipped from the company's works in London, but the body was built and upholstered at the local works of the exhibitor. The sides are of aluminium with welded joints, and moulding of Chinese redwood. Silver-plated fittings, electric speaking apparatus and other high-grade accessories complete this luxurious car.

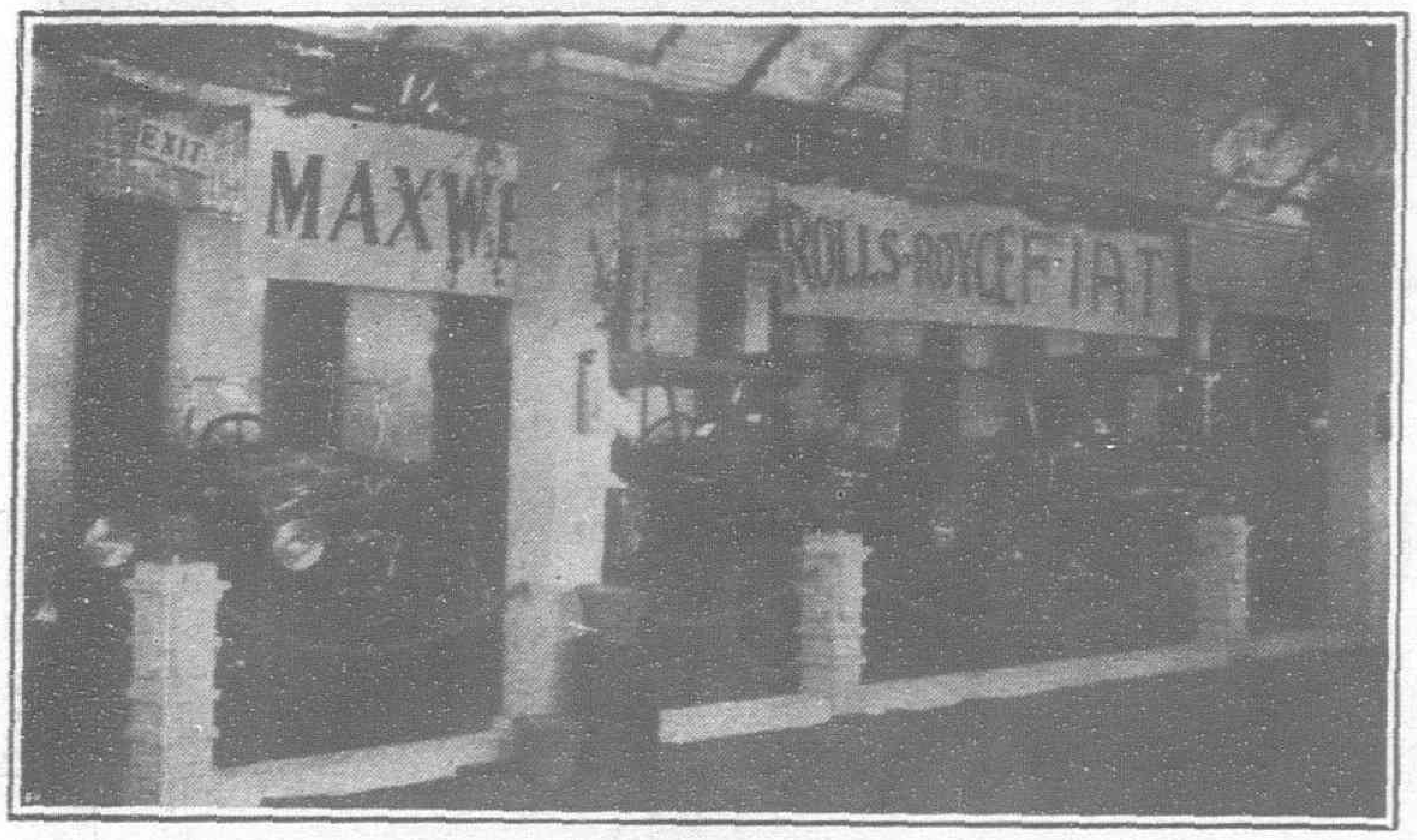
The engine of 40-50 horse-power is a six cylinder vertical type suspended on the frame by a patented device, which allows the members of the frame relative movement to one another for the negotiation of rough roads without involving extra strain on the arms of the crank chamber. The cylinders are cast complete in groups of three and the valves are arranged along one side of the engine and are operated by a single cam shaft. The inlet and exhaust valves, of high chromium steel, are interchangeable. The induction and exhaust valves are operated by means of rocking levers pivoted at one end, and fitted at the other with a roller lying between the valve spindle and the cam. These levers are fitted in pairs, one inlet and one exhaust, mounted on one base, and attached to the crank chamber by studs. The introduction of the roller and lever eliminates the side pressure exerted on the lifter slides when cam and tappet rod come into actual contact. The carburetter is of the float feed spray type, fitted with a special automobile valve, which accurately adjusts the carburation for all speeds of the engine, and enables the engine to run "dead-slow," with a maximum of torque when required.

The Fiat Tractor.—Although not exhibited at the show, the new Fiat tractor is one of the most promising machines for the Far Eastern market, especially in regions, where like Manchuria, Siberia, Philippines, Siam, the F.M.S., Dutch East Indies and Formosa, agriculture is conducted on an extensive scale. These machines have just completed some severe tests in competition with makes of all other countries with great success.

One of these Fiat machines ploughed 0.69 acres an hour to a depth of 7 inches with the use of only 15.3 pints of paraffin per acre. On the drawbar tests the pull to skid the wheels was 3,500-lbs., and the sustained pull of the Fiat was 3,000-lbs. On the belt test the brake horse-power at a belt speed of 2,200 feet per minute was 26.2, and the maximum brake horse-power was 27.5.

One of the features of the trials was the use of French national fuel composed of 50 per cent. benzole and 50 per cent. alcohol, whose use is recommended by the government in order to encourage agriculture and to make the French industry independent of foreign fuels. Better results were obtained with this fuel than with paraffin, the machines hauling six furrow ploughs and working to a depth of nearly eight inches, notwithstanding the very hard ground which has not been cultivated for seven years. Owing to a temporary shortage of benzole the percentage of alcohol had to be increased on one or two days to as high as 90, but this did not affect the working of the engine, nor was any difficulty experienced in starting up from cold. The only mechanical change made in the engine was a slight increase in compression, and, of course, the carburetter was adjusted to get the best results with this fuel.

The lesson learned from the trials is that farming operations can be conducted very successfully with native-produced French fuel which under present conditions is cheaper than imported petrol.



In addition to the Rolls-Royce, the Shanghai Horse Bazaar and Motor Co. exhibit a complete line of the Studebaker Sixes, making an exceptionally fine show. The seven-passenger big six shown is a car of 126-inch wheelbase, with 60 horse-power Studebaker demountable-head motor with two-range carburetter, shock absorbers, artistic straight side slanting windshield with ventilator base and integral corner lights, jeweled eight-day clock, tonneau light with extension cord, gypsy head with rectangular plate-glass window in rear, 33 by 4½-in. cord tires; weight 3,125-lbs.

The five-passenger Special Six on exhibition is a car of 119-inch wheelbase; with 50 horse-power Studebaker demountable-head motor, improved carburetter with "hot-spot" intake manifold; cowl lights at corners of windshield; outside and inside door handles; tonneau light with extension cord; 32 by 4-in. cord tires, while the Special Six four-passenger roadster seats four passengers comfortably; individual front seats are separated by an aside and there are four wide doors which eliminate crowding and inconvenience to passengers.

In the same space is shown a Maxwell and a Fiat car.

Inniss & Riddle (China), Limited

STAND No. 5

This concern exhibits a line of its many engineering and other specialties of British and American manufacture, foremost among which are two light type 6 and 12 horse-power "Kelvin" marine motors and two 13 and a 26 horse-power heavy type motor from the same makers. A 12 horse-power "Robey" crude oil engine; a "Universal" motor and generator from the Universal Motor Company of Oshkosh, Wis.; "Lodge" spark plugs; Fuller's "Sparta" car batteries; a "Powerlight" set with generator from Dickenson Electric Manufacturing Company driven by a Hamworthy oil engine; Bradbury sewing machines; "B.T.H." (British Thomson Houston) magnetos; gasoline brushes; "Linisher" machine; radial drills, lathes, screw-cutting lathes; hand lever bench shaping machine, etc., for garage use, from Drummond Brothers, Ltd. of Guildford, England; a complete electric plating and polishing outfit from the well-known pioneers and experts in this line, Messrs. Canning & Co., Ltd. of Birmingham, England; Berry's electric grates and "Everite" roofing. A most interesting and instructive exhibit of British products.

Kelvin Motors.—The "Kelvin" motor exhibit embraces various machines in sizes from 3 to 60 h.p. This motor is manufactured by the Bergius Launch and Engine Co., Ltd., Glasgow, and 3,000 British fishing vessels, as well as many motor boats used during the war on active service, which were fitted with the "Kelvin" engine testify to the severe and continuous service that can be exacted from this motor. During the war the demand for the "Kelvin" engine was unprecedented and the entire output was required for war purposes. The "Kelvin" engine has been on the China market since 1904.

Electro-Plating Plant.—The electro-plating plant from Messrs. Canning & Co., Ltd., Birmingham, is of special interest to the garage trade. Complete plants, from the small gold and silver-plating outfits suitable for the manufacturing jewelery to large installations for garages and factories are carried in stock.

Drummond Machine Tools.—One of the leading features of Messrs. Inniss and Riddle's stand is the exhibition of Drummond Brothers, Ltd., Guildford, machine tools for garage equipment in which are shown the 3½-in. centre back geared, sliding, boring and screw-cutting lathe. With this lathe it is possible to do all repairs necessary to a motor truck, with the exception of reboring the cylinders and re-turning the crankshaft. To the above lathe may be attached the firm's new indexing, milling and gear-cutting attachment which turns the lathe into an efficient gear-cutting machine.

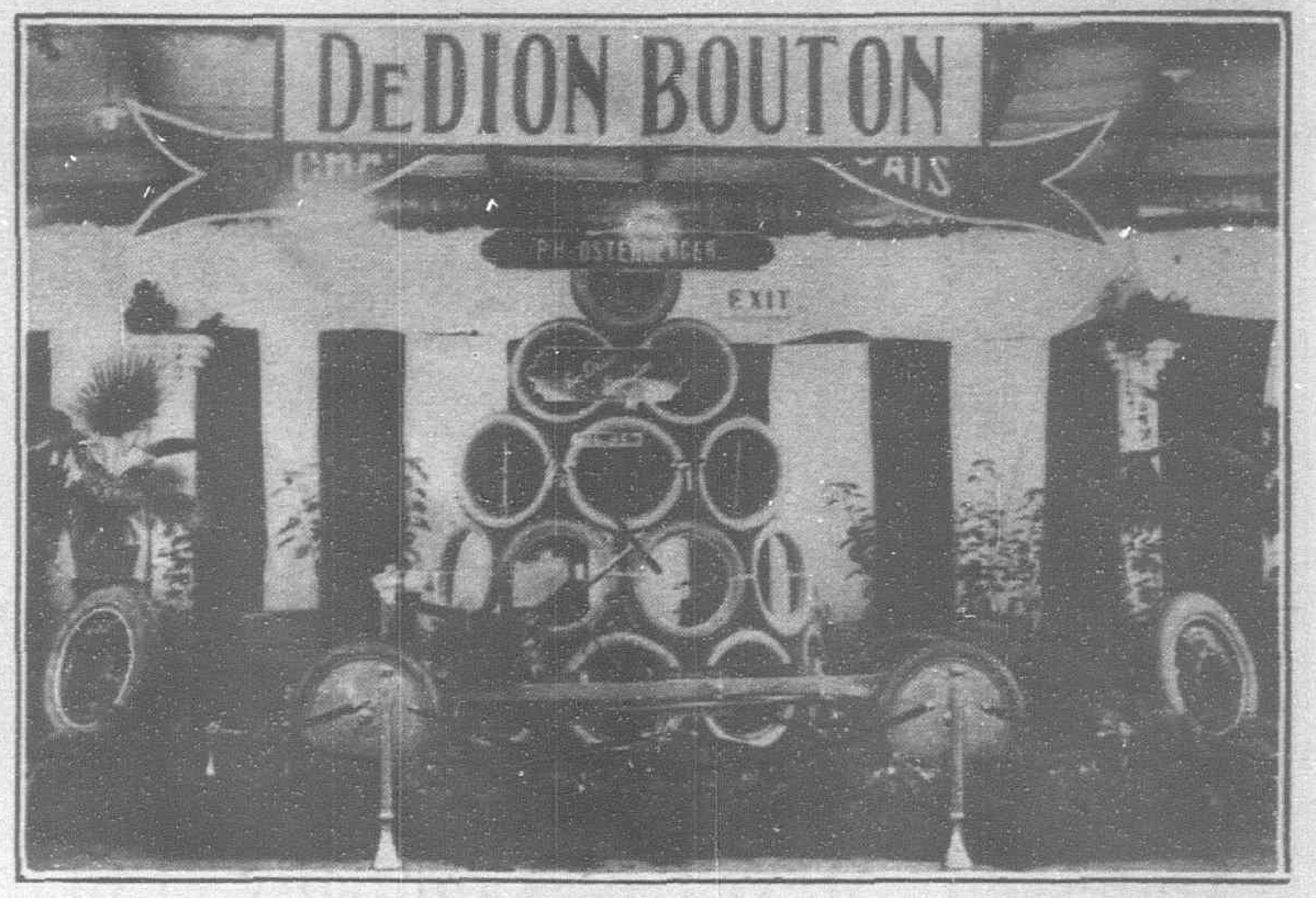
"Everite" Roofing.—Manufactured by the British Everite and Asbestilite Works, Ltd., Manchester, is well displayed.

Racine & Company

STAND No. 6

RACINE & Company, one of the oldest French firms established in China, exhibits a complete autogenous acetylene welding outfit manufactured by the Far East Oxygen & Acetylene Company (Société d'Oxygene et d'Acetylene d'Extreme Orient). This company, the pioneer in autogenous welding in the Far East, was created in 1909 in Saigon and the headquarters subsequently removed to Paris. The head offices for the Far East are still at Saigon, where they manufacture principally oxygen by the Claude patented process by liquid air. The business of this firm has since spread over the Orient, where it has achieved first place in this new and important industry. The standard outfit shown by Messrs. Racine & Company is worth study and examination by engineers and garage owners. In addition to the above, Messrs. Racine & Company also exhibit the Bergougnan tires for autos, trucks and rickshaws, manufactured by the Société Generale des Etablissements Bergougnan, of Clermont-Ferrand, France.

The products of this firm, organized in France in the early days of the automobile industry, earned in France the title of "Kings of the Road" (Rois de la Route). Their endurance is claimed by the manufacturers to be practically unlimited and cases are reported where the chassis has worn out before the tires failed. The speciality of this company is the solid tire for heavy weights. During the war heavy guns were fitted with "Bergougnan" special solid tires and they proved very successful on the Flanders roads, and subject to the heavy wear and tear that use in such severe conditions required.



Grand Garage Francais

STAND Nos. 7, 8, 9

HERE we have a typical French exhibit, in which De Dion-Bouton, Andre Citroen cars and Michelin tires and steel wheels are featured.

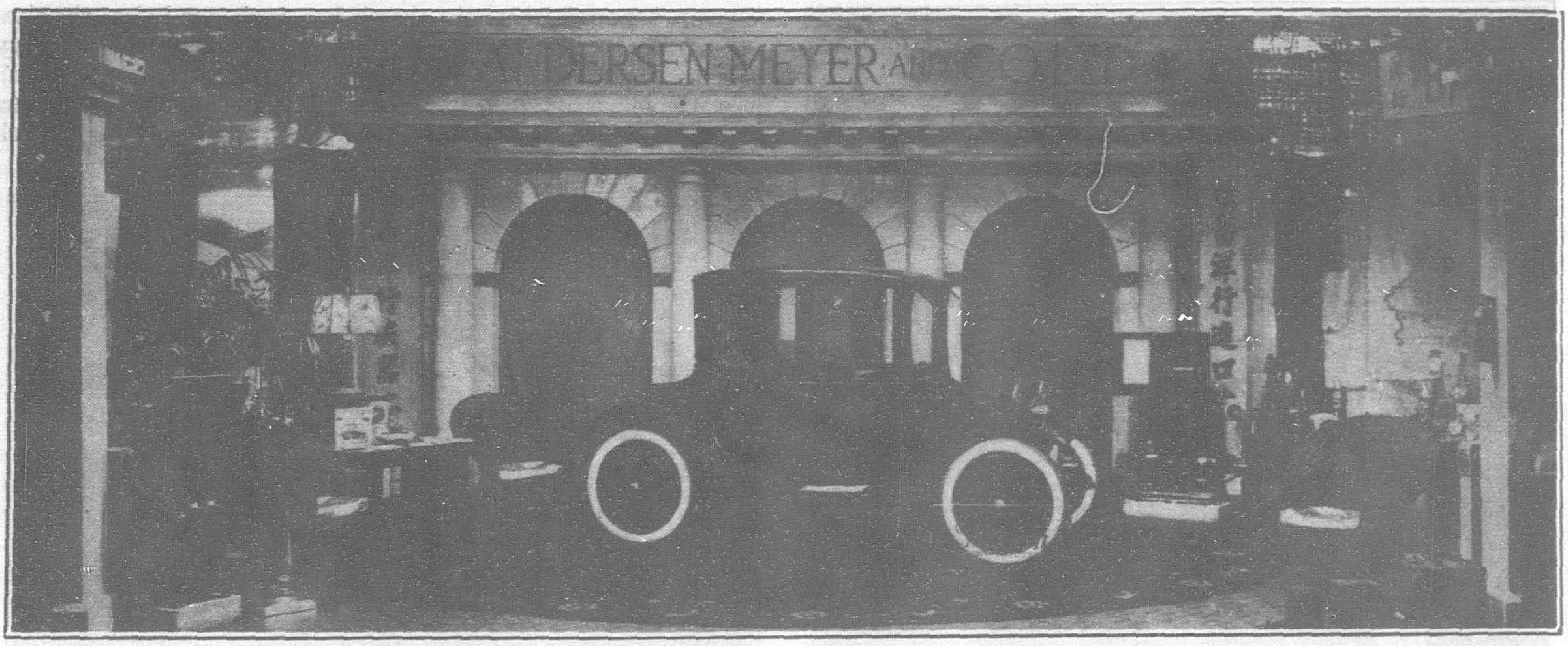
The Citroen Cars.—Andre Citroen factory is the best example of mass production in France, and its products are familiar sights on the streets of Shanghai and other Oriental cities. Large scale production and closely figured selling costs make it possible to deliver these cars here at figures lower than any other three speed cars on the market.

The Citroen car has the advantage of small wheels, about twenty-eight by three and a half, disks, carrying smaller tires than the Ford, and thereby offering economy in cost and maintenance. On gas, it makes better than thirty miles to the gallon.

De Dion-Bouton.—The Grand Garage Francais is also displaying the chassis de Luxe of De Dion-Bouton, characterised by extreme simplicity of construction, featuring full cantilever springs, full floating rear axle, latest improved differential, clutch and motor.

Delage.—Also the Delage, the luxurious French car made with front wheel brakes. It comes in either four or six cylinder.

Michelin Tires.—The Grand Garage shows a full assortment of Michelin tires, fabric and cord, straight side and clincher, in sizes ranging from those economical Citroen dimensions to those sufficient to support the heaviest truck and cargo.



Andersen, Meyer & Company, Ltd.

STAND No. 10

MILBURN LIGHT ELECTRIC CAR.—The exhibit of this company is limited solely to the Milburn electric car, one of the most elegant and popular cars in Shanghai, whose straight and level roads are peculiarly adapted for the economical running of this type of safety machine for the family. One charge is sufficient for the longest drive through city and environs. A general electric home charging outfit, which can be purchased with the car and attached in the home garage by means of a plug, with the same simplicity as that which connects up the family iron, is also exhibited with the car. It charges while you sleep (no harm car be done by letting the current run on after it is fully charged), and is ready to go at touch of the throttle next morning.

With a Milburn electric, there is no radiator freezing, no locked cylinders, no flooded carburetter, no hesitating motor to coax on a cold morning. The chauffeur can be dispensed with and no nerve-racking driving lessons are necessary. One movement of the starting lever, and you are away, silently, swiftly, safely. It obeys your slighest guidance as if by instinct.

Milburn offers a choice of velours and plushes in variety of designs. The luxurious softness of cushions is never lost, while the exterior represents the highest development in the fine art of body finishing.

An illustration on page 24 shows the pretty car on its way to Woosung, which trip was made in about forty-five minutes. Many electrics bought for the exclusive use of the women of the family have been promptly confiscated by the men of the household and appropriated for use in going and coming from the links.

Andersen, Meyer have a *clièntele* which pronounces the Milburn one hundred per cent. satisfactory.

* * *

Barlow & Company

STAND No. 11

EXHIBITING a line of carriage and other lamps made by Wyncott & Son, Birmingham, England.

Good Roads Movement.—In this stand is also the desk of the good roads movement of China, an association created for the purpose of encouraging the building of modern highways throughout this country. The organization does not build roads. Its main purpose is to create a public consciousness favorable to this great reform, against which there has hitherto been opposition for traditional reasons. The education of the people is perhaps the most difficult task in road building, a task that the association has taken upon itself. This movement has as its Honorary Secretary Mr. George E. Sokolsky, of the Shanghai *Journal of Commerce*, assistant director of the government bureau of economic information, and connected with other Chinese commercial bodies. A set of maps drawn by Mr. S. J. Powell, the well-known engineer, adorns the walls of the stall, showing the proposed new roads in various provinces. The movement needs and merits the support of Chinese and foreigners. Its work benefits all.

* * *

The Texas Company

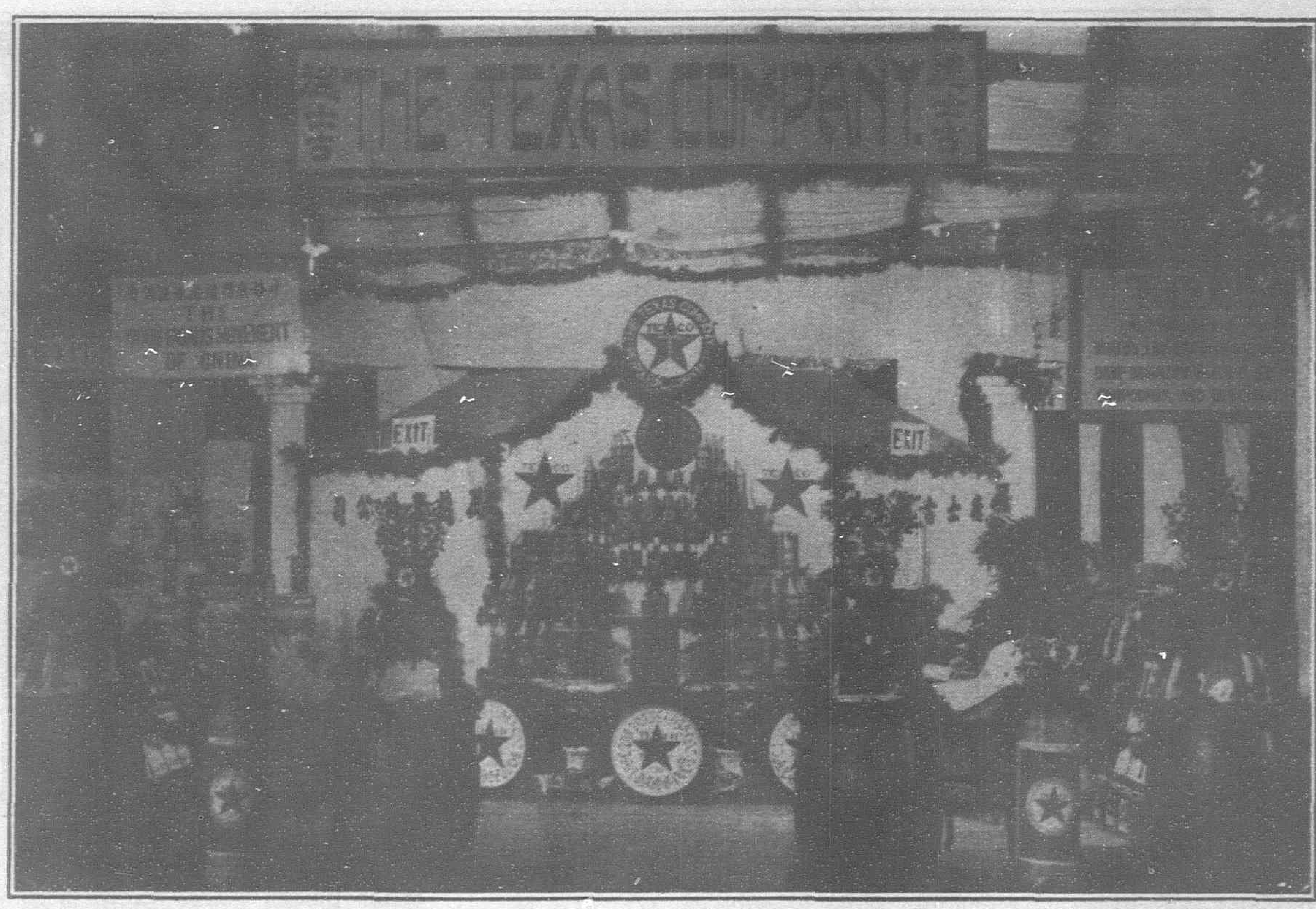
STAND No. 12

THE Texas Company is an ever growing organization which is carrying the red star and green T into all quarters of the globe and to every place where the state of civilization is high enough to require the use of kerosene oil for light, heat and power, and lubricating oils for the lubrication of many and varied kinds of machinery which manufacture other necessities in life.

"TEXACO" implies service and the Company enjoys the reputation of always giving the maximum consideration to its consumer's requirements. This means not only providing goods of the best quality but of placing them on the market in the most up-to-date packings.

Since The Texas Company commenced operation in the fall of 1916, and notwithstanding the many difficulties to be overcome, the Company expanded until now it is one of the leading factors in the distribution of petroleum products in all of the principal towns in China. The merit and high quality of the texaco products have greatly impressed the buying public in this country and to such an extent that texaco sales are only limited by available supply.

To adequately describe the different products marketed by this Company and to mention specific conditions under which they are made, would almost require a separate publication for each product. However, we may volunteer a little information which doubtless will give some idea of the extent and character of Texaco products.



Each texaco product is manufactured for a specific purpose and its fitness for recommended use is fully determined by practical tests before being placed on the market; the crudes are carefully selected and the method of manufacture is scientifically conducted so as to bring out the valuable characteristics of the oil. Consequently, the study and experience given to the thousands of problems involved in the use of petroleum products, is made available through the use of texaco petroleum products.

The number of products marketed by The Texas Company have increased from time to time until practically every petroleum product is now included. The Texas Company's chief products are texaco auto gasolene; texaco kerosene, "Sing" and "Yinfoo"; texaco naphtas prepared for varnish and paint work requiring quick evaporation; texene or texaco spirit, a mineral terpentine, excellent as a mineral thinner for varnish and paint work.

Texaco lubricants are made in different classes for all lubricating requirements; texaco cylinder and valve oils, engine and machine oils, motor oils, marine oils, railroad oils, textile oils for textile machinery. Air compressor oils for high, medium and low-pressure compressors; texaco crater compound for lubricating different classes of gears, wire ropes and chains exposed to excessive heat, dust, salt water and chemicals; texaco lubricating oils specially prepared for electric transformers, hydraulic systems, ink stocks, twine oil, harness oil, tempering oil, cutting oil, etc. Texaco greases are manufactured for all purposes where grease may be used to advantage; transmission lubricant, possessing high lubricating value, will keep the gears of motor cars running smoothly and reduce noise and frictional wear. Home lubricant for use in every home in lubricating sewing machines, phonographs, etc.; refined wax for candle making, etc.; texwax, texaco roofing and texaco asphaltic paint, an excellent paint for iron fences, metal roofing, iron girders, smokestacks and all metal surfaces requiring a durable paint coating.

The Texas Company maintains competent lubricating engineers in every district, whose duty it is to go over plants, investigate all conditions, make recommendations as to the most suitable lubricants to be used and the best method of handling and applying them.

The head office of The Texas Company in China is located at 128 Szechuen Road, Shanghai, with branches at Hongkong, Canton, Amoy, Chinkiang, Wuhu, Hankow, Tsingtao, Tientsin, Dairen, Mukden, Harbin and Chemulpo, Korea.

* * *

"Remember its Waterproof"

A. Arnaud-Coste and R. V. Dent

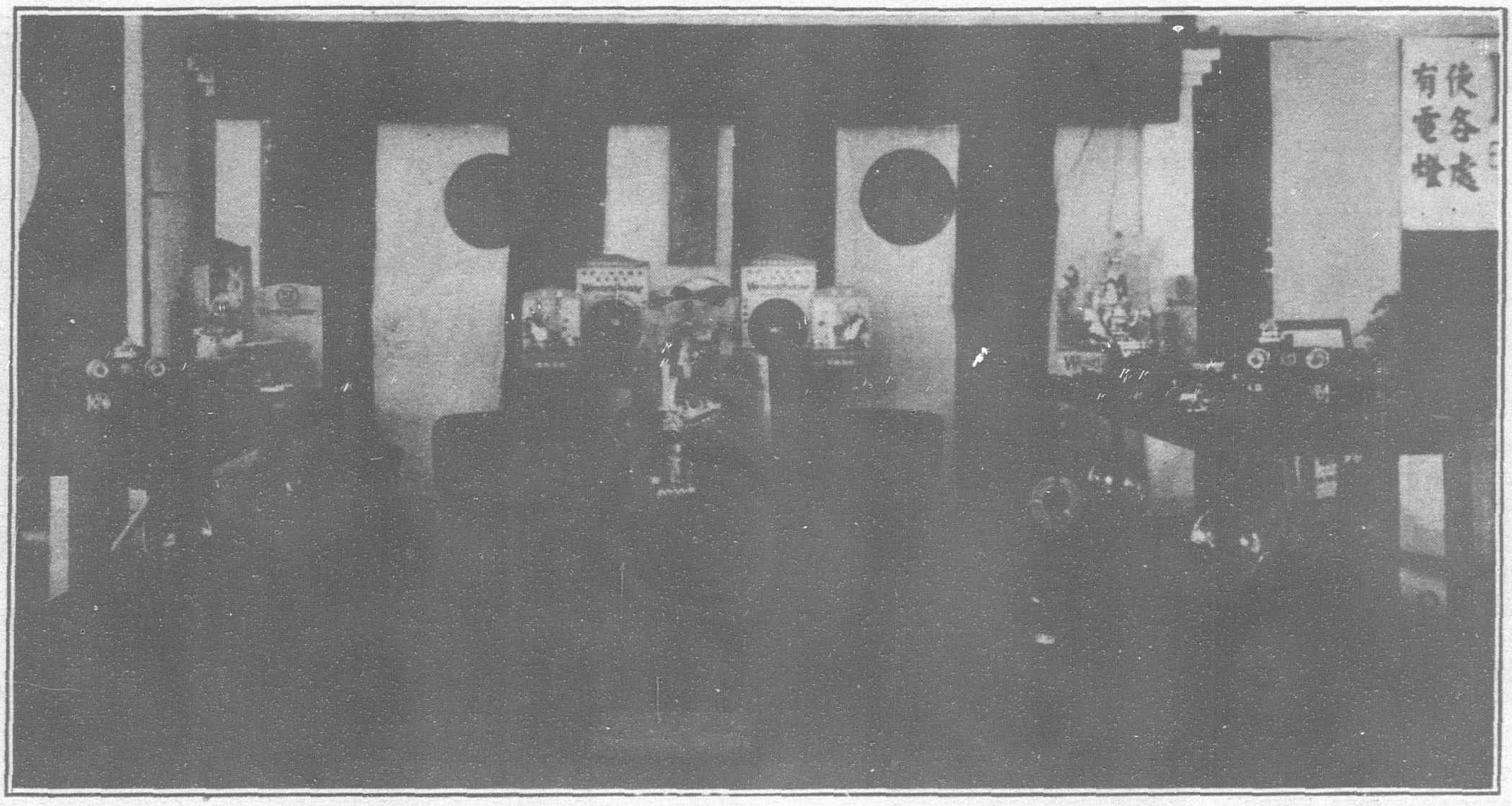
STAND No. 13

THE exhibit of this company is confined to the water-proof and anti-corrosive paint specialties of Toch Brothers, 350 Fifth Ave., New York. It shows Toch Brothers waterproof paint and "Tocholith" anti-corrosive paints for garages, etc.

B. F. Goodrich

STAND No. 14

EXHIBIT of the celebrated Goodrich tires.



Westinghouse Electric International Co.

STAND No. 15

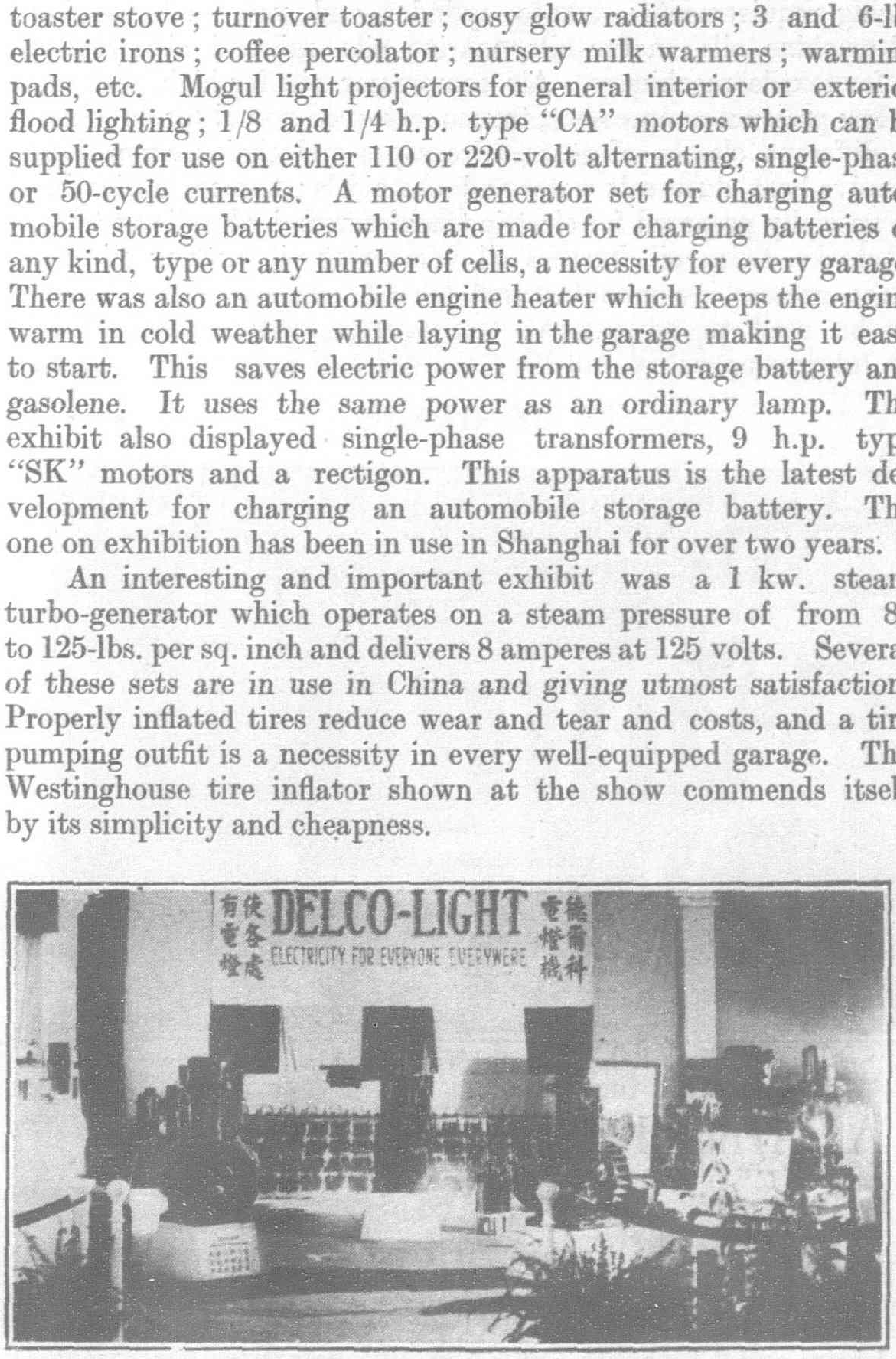
THE exhibit of this great American electrical concern is confined to minor products and accessories in keeping with the demands of the automobile trade and the home. The entrance of this firm into the Chinese field with their own office and representative is of too short a duration to have accomplished any important installations such as are found scattered all over Japan and other parts of Asia, and their activities at the motor show were largely educational in order to familiarize the Chinese with their name and products. The short comprehensive resumé of facts about the Westinghouse plants, products, subsidiaries and factory system, prepared by their local representative and distributed at the show did much to acquaint the Chinese with the Circle "W" chop and what it stood for in service and efficiency.

The names of the Westinghouse industries and their ramifications comes as an eye-opener even to better informed engineers, who will be interested in the following list :—

American Brake Company ; The Bryant Electric Co.; Canadian Concrete Products Corporation ; Canadian Krantz Electric & Manufacturing Co., Ltd. ; Canadian Westinghouse Co., Ltd.; Cutter Co., George ; East Pittsburgh & Wilmerding Coal Co.; Fountain Electrical Floor Box Corporation ; Interborough Improvement Company ; Krantz Manufacturing Company ; The Laurentide Mica Co., Ltd., Locomotive Stoker Company ; Mansfield Vitreous Enamelling Co ; Massey Concrete Products Corporation ; Milwaukee Locomotive Manufacturing Company ; National Brake & Electric Company ; National Steel Foundries ; National Utilities Corporation ; New England Westinghouse Company ; Nuttall Co., R. D.; The Perkins Electric Switch Manufacturing Co. ; The Pittsburgh High Voltage Insulator Co.; Pittsburgh Meter Co.; Safety Car Devices Co. ; South Philadelphia Co. ; Turtle Creek & Allegheny River R. R. Co. ; Union Signal Construction Co. ; The Union Switch & Signal Co. ; United Pump & Power Co. ; The Westinghouse Air Brake Co. ; Westinghouse Air Brake Home Building Co. ; Westinghouse Electric International Co. ; Westinghouse Electric & Manufacturing Co.; Westinghouse Electric Products Co.; Westinghouse Friction Draft Gear Co.; Westinghouse Gear & Dynamometer Co.; Westinghouse Inter-Works Railway Co.; Westinghouse Lamp Co.; Westinghouse Pacific Coast Brake Co.; Westinghouse Traction Brake Co.

Amongst the products exhibited having special interest for the garage and automobile trade was a foolproof and fireproof motor starting switch designed expressly for use in garages and other places where there is danger of fire. This switch is hand operated, immersed in oil and totally inclosed. There was also a complete range of Westinghouse lamps ; a 1/6 and 1/4 h.p. Type "CD" motors which can be supplied for use on a 32-volt direct current circuit ; chafing dishes, curling irons, standard toaster stove ; turnover toaster ; cosy glow radiators ; 3 and 6-lb. electric irons ; coffee percolator ; nursery milk warmers ; warming pads, etc. Mogul light projectors for general interior or exterior flood lighting ; 1/8 and 1/4 h.p. type "CA" motors which can be supplied for use on either 110 or 220-volt alternating, single-phase or 50-cycle currents. A motor generator set for charging automobile storage batteries which are made for charging batteries of any kind, type or any number of cells, a necessity for every garage. There was also an automobile engine heater which keeps the engine warm in cold weather while laying in the garage making it easy to start. This saves electric power from the storage battery and gasolene. It uses the same power as an ordinary lamp. The exhibit also displayed single-phase transformers, 9 h.p. type "SK" motors and a rectigon. This apparatus is the latest development for charging an automobile storage battery. The one on exhibition has been in use in Shanghai for over two years.

An interesting and important exhibit was a 1 kw. steam turbo-generator which operates on a steam pressure of from 85 to 125-lbs. per sq. inch and delivers 8 amperes at 125 volts. Several of these sets are in use in China and giving utmost satisfaction. Properly inflated tires reduce wear and tear and costs, and a tire pumping outfit is a necessity in every well-equipped garage. The Westinghouse tire inflator shown at the show commends itself by its simplicity and cheapness.



Fearon, Daniel & Company

STAND No. 16

HERE we find an interesting exhibit of the "Delco" lighting units, manufactured by the Delco Company of Dayton, Ohio. These include a 3,000 watts, 32 v battery plant; another 3,000 watt, 110 v. non-battery plant with a capacity of 150 twenty watt lamps; another 2,500 watt kerosene engine generating set of 160 amper hours, 110 volts, with battery. Storage batteries; Victor portable stereoptican from the Victor Animatograph Company of Davenport, Ia.

Olivier & Company

STAND No. 17

EXHIBITING models of the French "Unic" car and the "Verax Fire Extinguisher," for which they are agents in China. The Unic car is manufactured in several types ranging from the ordinary touring car to commercial trucks. The 13-24 h.p. "Unic" chassis can be fitted with several types of bodies, and the result is a pleasing and attractive car with an engine which fulfils all the requirements exacted of it. The popular styles are seven-seater touring, coupé de luxe, landaulette, six-seater sedan and the four-seater torpedo, all with a 13-24 chassis.

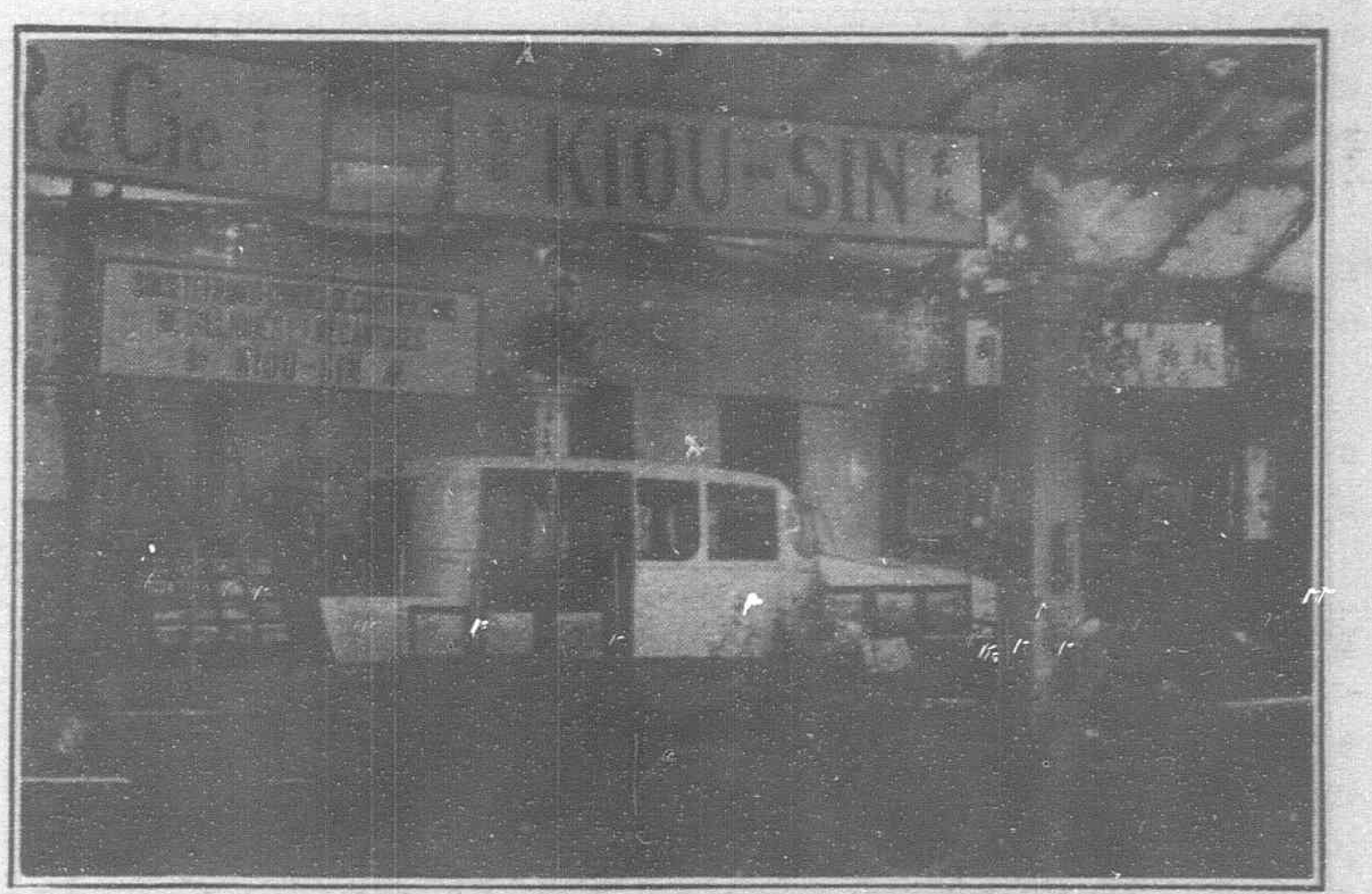
* * *

Societe Franco-Chinoise de Constructions Metalliques et Mechaniques

STAND Nos. 18, 19

EXHIBITING two hydrosliders, of which several are now operating on Chinese rivers.

These hydrosliders are built by the Ste. Ame des Hydroglisseurs de Lambert at Nanterre (Seine), a well-known French firm, in varying sizes and speeds, the latter covering from fifty-five to ninety kilometres per hour.



One of the boats has been sold to the governor at Canton, where it has proved its reliability and high efficiency. Another is being used for the purpose of carrying on regular trips on the upper Yangtze between the cities of Ichang and Chungking, and it is further planned to establish regular communication on the shallow rivers in the interior by hydrosliders on a large scale.

Much attention is being paid to these watersliders of immense speed in most of the European countries. During the war they rendered excellent services to the French and British armies, as well as to their expeditionary forces in the colonies. So they were used for fighting purposes and as means of communication in Mesopotamia.

It will give an idea of their efficiency to state that the trip from Bagdad to Bassora on the water which takes at least 12 days was easily completed by them in 24 hours.

Being of a very slight draft, they are especially fit for navigating the typically shallow Chinese rivers, for the transport of passengers and articles of light weight. By their light draft they are not at all affected by strong currents and in rapids, and lose under most trying circumstances neither in speed nor in manageability.

This new type of shallow draft boat comes to solve many of the problems attending the navigation of China's inland streams and rivers. The Societe Franco-Chinoise de Constructions Metalliques et Mechaniques, the new combination which took over the old and well-known machine shops and shipbuilding works of Nicolas Tsu, is pushing the use of these boats in the upper Yangtze regions and news comes of two river navigation companies organized in Szechuan which will employ hydrosliders.

This exhibit, although poorly shown, is one of the most interesting features of the show.

The possibilities offered in China for these boats has brought other French concerns into the field, and we find the Dumont-Galvin hydroslider represented by Chapeaux Freres, 4 and 5 French Bund, Shanghai, an active competitor.

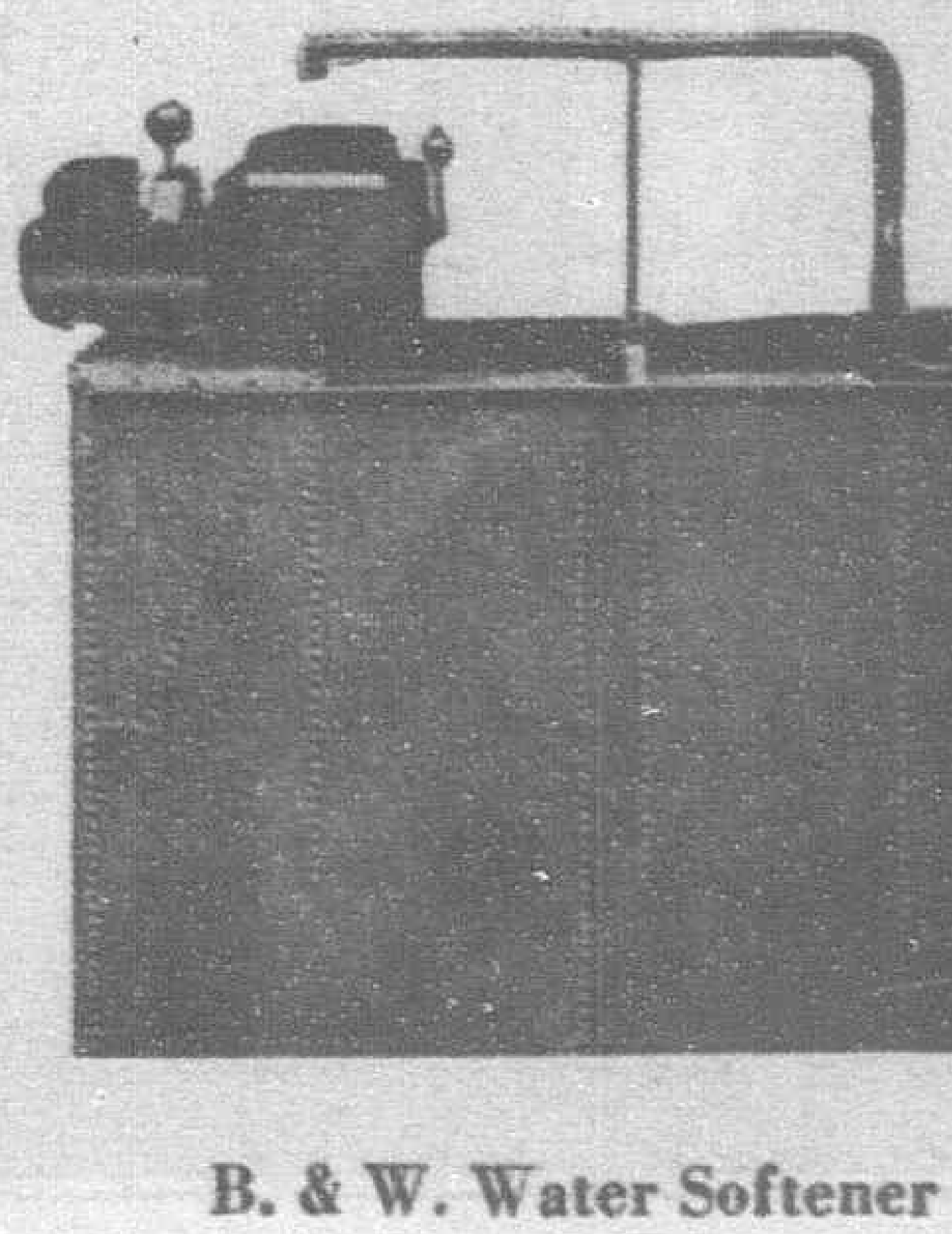
* * *

Babcock & Wilcox, Ltd.

STAND No. 20

THIS company has a model of its well-known water-tube boiler, tube cleaner, ventilator and blower and an automatic water purifier.

This water softener has been designed for the purpose of removing, by chemical means, the scale-forming matter from water prior to its use, thereby preventing damage to boilers, etc., from the accumulation of incrustation, at the same time effecting a large saving in fuel consumption by keeping all parts of the boiler heating surface in a clean and thoroughly efficient condition.

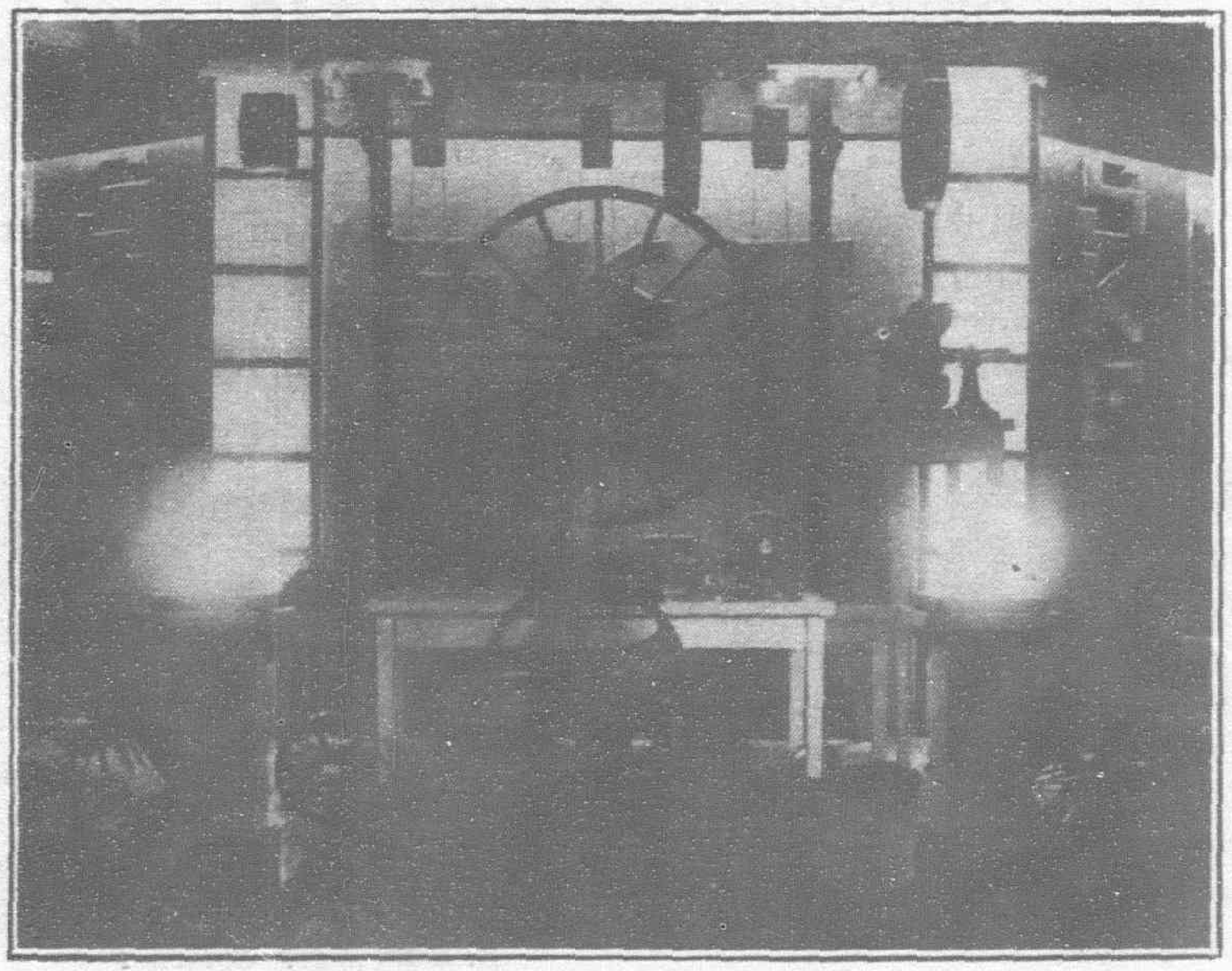


B. & W. Water Softener

It is extremely simple in its working, and the arrangement for mixing the chemical reagents with the water insures most reliable results. The apparatus works quite automatically, the supply of water to the softener being regulated by a float valve, and the chemicals being added by a patent automatic measurer.

If a supply of exhaust steam be available it can be utilized for heating the water, thereby shortening the time of treatment, enabling a smaller apparatus to be used for a given quantity of water softened, and making the plant a combined water softener and feed-water heater. If no steam be available, however, water can be equally treated in the cold.

Over 4,500 of these softeners are now in use all over the world in various industries, such as: Electric light stations; collieries; cotton mills; laundries; railways; mines; silk dyeing works; breweries, etc.



In this country of hard waters, filled with impurities of all kinds which make for scale and other incrustations in boilers which diminishes their efficiency, the B. & W. water softener offers a most practical remedy.

* * *

Chinese S. K. F., Limited

STAND No. 21

THIS is an extremely interesting and well-displayed exhibit of the justly famous patent ball-bearing specialties, manufactured by the Aktiebolaget Svenska Kulagerfabriken, of Gothenburg, in Sweden.

Packard

Exhibited by H. S. Honigsberg & Co., Inc., Agents

STAND No. 22

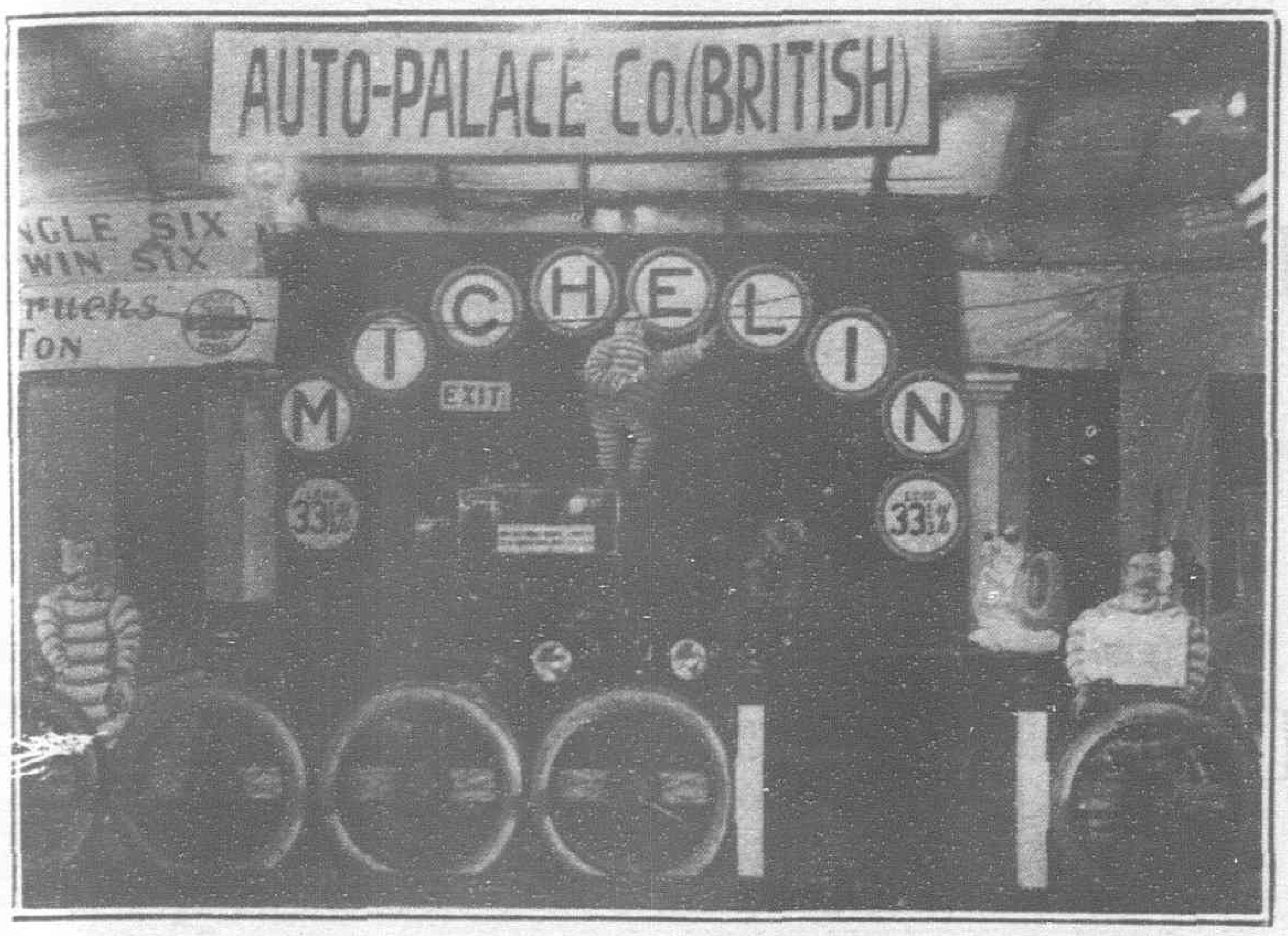
DISPLAYING a model of the single-six, one of the most beautiful of American designs and a twin-six, another classy car. Both of these models are carried in stock by the agents.

Stewart Motor Corporation, Buffalo, N.Y.

H. S. Honigsberg & Co., Inc., Agents

STAND No. 23

SHOWING two models of the Stewart one-ton quality truck. These handy trucks are made in various shapes for special purposes, such as delivery and express, covered, open or stake body, and for coal and contracting hauling with special steel dump body. Only the choicest ash, white wood, and hard pine, heavy gauge sheet steel and forgings and castings of proven quality enter into their construction. Frames are heavily ironed. They have graceful, distinctive lines, and brilliant, rich finish and are built for long service. "An Engineer's Masterpiece."



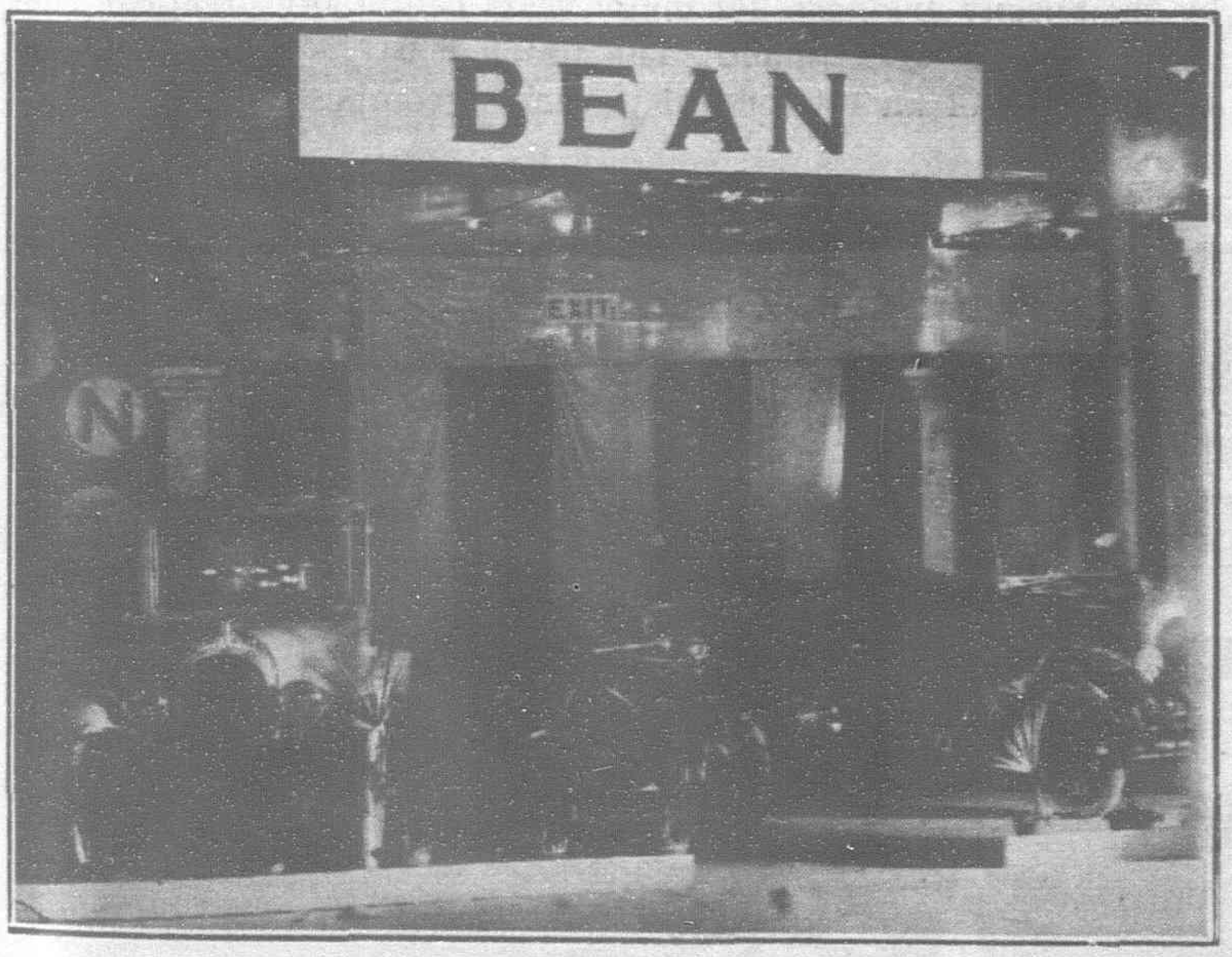
Auto Palace Company

STAND No. 23

FEATURING Michelin tires, Renault cars and Douglas motor cycles.

A magnificent 12-16 h.p. Renault limousine was exhibited by the Auto Palace, a British concern, the oldest garage in Shanghai. Another important exhibit was a Douglas motor car cycle, made by the firm whose motor cycles were used so extensively by the war office in all theatres of operations during the great war.

The Auto Palace also displayed the Oleo plugs, of French make, and a number of special designs of the Michelin tire, particularly of the corded variety which have proved extremely popular for some years past. The garage management of this company act as agents for the Renault cars, and exhibited one of the latest type, complete with electric lighting installation and starter, and h.t. magneto. The consumption of petrol by this car is 15 miles to the gallon. The Auto Palace Company deal chiefly in second-hand rebuilt cars, exhibited at the Auto Palace on Avenue Joffre.



Anglo-Chinese Engineers' Association, Limited

STAND Nos. 24, 25

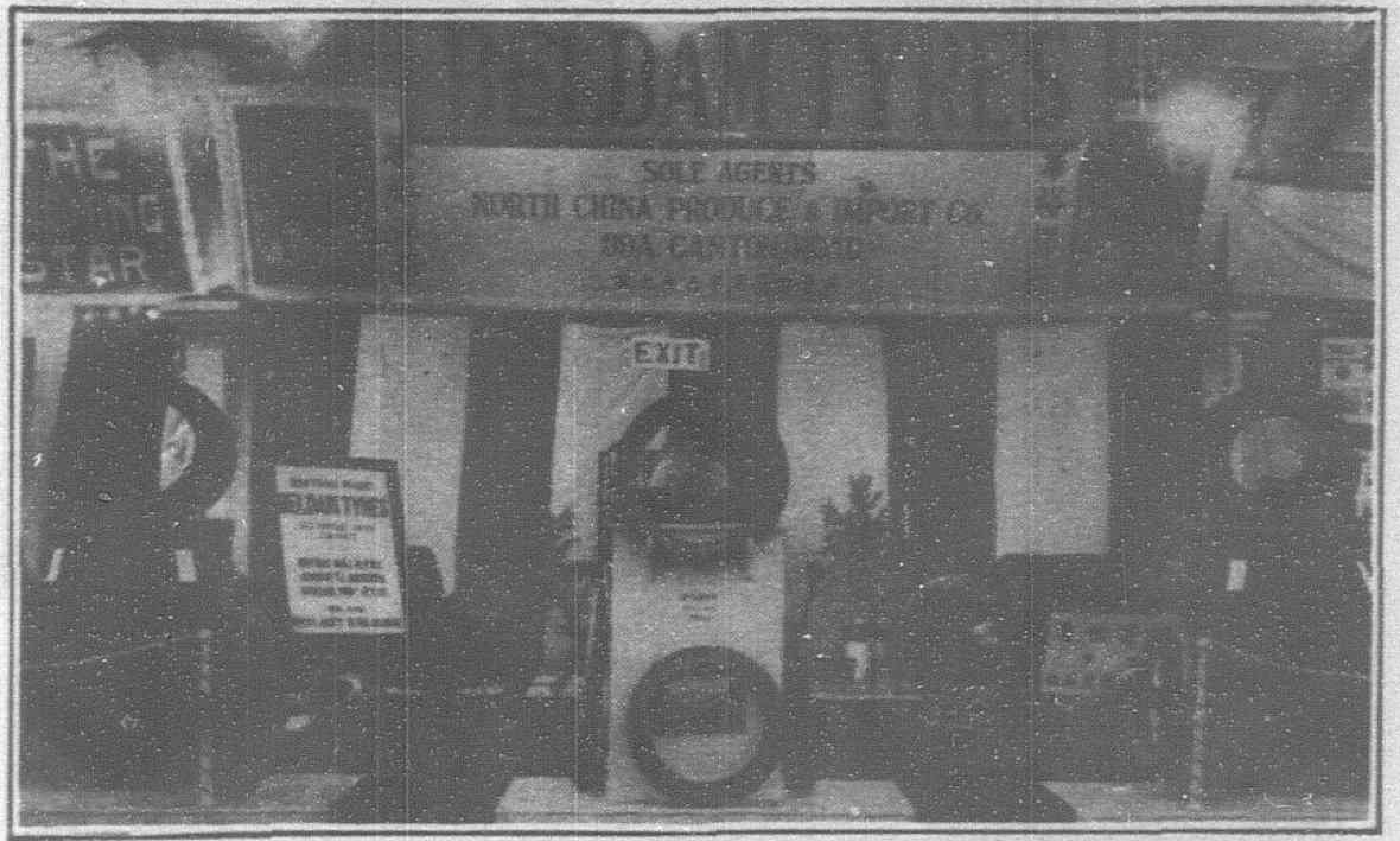
IN Stand No. 24 this company exhibits three fine "Bean" cars from Harper Sons & Bean, Ltd., and "Triumph" motor cycles with sidecars.

The "Bean" car formerly was known as the "Perry." The present "Bean" is an improved and enlarged model, and it is claimed to be one of the most up-to-date and lowest priced cars of British manufacture for its size.

One of the models is a four-seater touring car with standard body, a two-seater coupé, and a two-seater sports type, whose petrol consumption is 28 miles to the gallon.

Two "Triumph" motor cycles, for which the company are agents, are also shown. Each cycle is the 4 h.p. model with belt drive, and one is a combination with a sidecar.

In Stand No. 25 are many interesting and useful engineering exhibits well worthy of careful investigation of prospective purchasers. Here are seen two generating sets with switch boards, the dynamos being from the Crypto Electric Company of London driven by a Dixon Brothers & Hutchinson, Ltd., Southampton, oil engine; a 25 h.p. crude oil two-cylinder marine motor, from the Invincible Engine Company of Keighley, England; a 20 h.p. Dixon Brothers & Hutchinson, Ltd. crude oil marine motor; a Crypto battery charging set; garage lathes and machine tools and electric fires.



Beldam Tyre Company

STAND No. 27

THE Beldam Tyre Co. (1920), Ltd., of Brentford, Middlesex, England, are bringing on the China market, through their agents, the North China Produce and Import Co., 39a Canton Road, Shanghai, one of the few all-British tires sold in China.

The exhibit shows the Beldam "Bull Dog" tire, conspicuous by its appearance and finish. The flexibility of the "Vs" along each side of the tread is claimed to lead to long life and to prevent the tendency to skid by wedging themselves between the casing and the road. Beldam "Bull Dog" tires are immune from punctures, their construction being covered by patents. The "Bull Dog" tire is the famous original "Beldam" design, the result of exhaustive experiments made by the late Mr. G. W. Beldam, originator of the tires and founder of the Beldam Tire Co., which started operations in 1909.

Another tire shown is the "Beldam" combination "V" steel-studded tire, constructed to insure absolute immunity from punctures and skidding in any weather and on all road surfaces, the rubber "Vs" counteracting slipping on dry and the imbedded steel studs insuring safety on wet, slippery roads—an ideal combination. A section of this tire is shown by the exhibitors.

The "Beldam" inner tubes which are shown are all of the heavy, red rubber type, specially moulded and strengthened on the parts next to the rim, exposed to the most wear and tear. "Beldam" motor cycle tires, all 4-ply, old favorites with the motor cycling world at home; are built on the lines of the motor tires, but they have an additional groove to take up circumferential slips. The motor cycle tubes are of the butt-ended type.

Most of the tires shown are clincher types, as owing to the company's heavy government contracts the installation of the machinery for the manufacture of straight sided tires was, unfortunately, delayed. The 32 by 3½ straight tire is on the market, and is exhibited, however, and further sizes will soon be available. "Beldam" casings are built up on the finest Egyptian cotton fabrics; special attention being given to strong walls.

Asiatic Petroleum Company, Ltd.

STAND No. 28

DISPLAYING their various brands of shell oils and spirits, with photos of their Shanghai, Chinkiang and other installations in China.

* * *

Lee & Lee Garage

STAND No. 29

DISPLAYING an Albert and Willys-Knight car and Lee tires.

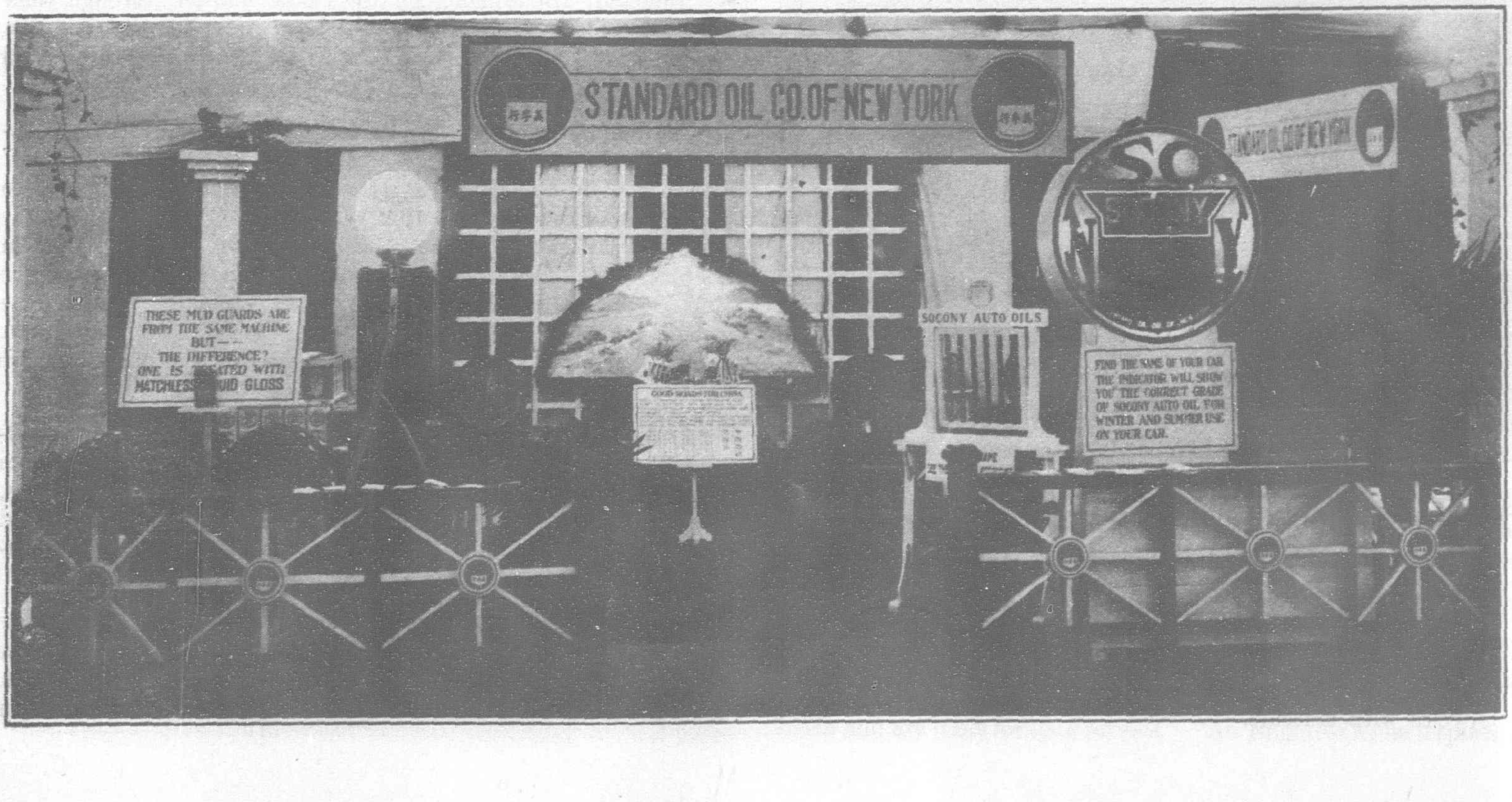
* * *

Standard Oil Company of New York

STAND No. 30

SOCONY products have played no inconsiderable part in the progress of the great automotive industry, the triumphs of which were so splendidly exhibited recently in China's first automobile show. Of timely interest indeed was the model Socony asphaltum road exhibit shown in the Company's booth near one of the main entrances of the exhibition building. The construction of an asphaltum road was clearly shown in miniature to thousands of interested Chinese visitors. By means of a scene in the background the road was made to disappear into the distance, opening up the beauties of a typical bit of Chinese landscape. No Chinese beholder could fail to be affected by the powerful suggestion produced by this picture—of the potential and undeveloped possibilities of a country in which all sections are closely united by a network of good roads and rapid communications, thereby ensuring the close and more sympathetic acquaintance of the citizens of different districts, and fostering the national sympathy and organized force of national opinion indispensable to a country's unity and prosperity.

The subject of good roads in China was investigated and studied by the Socony engineers for many years before any practical constructions were undertaken. The problem to be solved was the construction of an economical pavement composed of asphaltum


STANDARD OIL CO. OF NEW YORK
SOCONY
THESE MUD GUARDS ARE FROM THE SAME MACHINE BUT—— THE DIFFERENCE? ONE IS TREATED WITH MATCHLESS LIQUID GLOSS
GOOD ROADS FOR CHINA
SOCONY AUTO OILS
FIND THE NAME OF YOUR CAR THE INDICATOR WILL SHOW YOU THE CORRECT GRADE OF SOCONY AUTO OIL FOR WINTER AND SUMMER USE ON YOUR CAR.

and available local materials so blended as to withstand successfully the shock and stress of heavy Oriental traffic. After several years of preliminary investigation, involving a thorough study and analysis of local road building materials available in various districts, four standard forms of road construction were evolved, that are now in common and extremely satisfactory use in the largest treaty ports, namely,

(1) Surface painting
(2) Asphalt macadam
(3) Asphalt concrete (stanocrete)
(4) Sheet asphalt

The first two forms did not differ essentially in method from the standard European and American practice, but the sheet asphalt and asphalt concrete constructions were specially modified and improved compositions of asphalt and local material that would give a compact, resilient, and extremely durable wearing surface under the heaviest forms of Oriental traffic. The stanocrete or asphalt concrete construction being the more generally preferred to the sheet asphalt, as the slightly longer wearing qualities of the sheet asphalt are counterbalanced by the higher cost of construction.

Both the asphalt concrete and sheet asphalt pavements have successfully withstood the shock and stress of heavy traffic in the large treaty ports for from seven to ten years at a practically negligible maintenance cost. Many thousands of square yards of the asphalt concrete pavement have already been laid by the Shanghai, Peking, Tientsin, Hongkong and Hankow municipalities, and in every case the durability of the pavement has supported the original claims for this type of construction.

In addition to road work, asphaltic compositions are extensively used for roofing, water proofing, coating drain pipes, in the construction of tennis courts, sidewalks and as a mastic for breakwater joints and underwater constructions.

The Company maintains a special force of engineers whose services are at all times available to interested parties desiring information or recommendations for the use of asphaltum in conjunction with engineering problems.

* * *

Wah Chang Trading Company

Featuring Nash Motors, Miller Cord Tires and Prest-o-Lite

STAND No. 32

Nash Motors.—The Nash cars manufactured by the Nash Motors Company of Kenosha, Wisconsin, U.S.A., are shown in several types, such as the two-passenger, the five-passenger, the seven-passenger, the four-passenger "Spot" model, the four-passenger coupé and the seven-passenger sedan, fitted with the Nash perfected valve-in-head motor, marks a distinct advance in motor engineering. The one ton, and Nash quad types, possess the distinctive degree of perfection which the Nash motors possess. These are also shown by the Wah Chang Corporation, and for the rough use and long, severe service demanded of a motor lorry in China, where roads are in a frightful condition, except inside the Settlement, the Nash truck should prove most satisfactory.

Storage Batteries.—The Prest-o-Lite storage batteries made at Indianapolis, Ind., are also included in the Wah Chang Trading Corporation's exhibits. Power capacity and long life, are the three great essentials of a storage battery, and the manufacturers claim all these qualities in their battery, which was originated long before the storage battery came into use. Each jar is hand-inspected to an electrical test of 22,000 volts before being passed. Prest-o-Lite batteries have a correct size for every car.

Miller Tires are also on exhibition. The manufacturers claim their record of mileage on all tires, and their margins of service place the Miller tire very high in the popular estimation. They are subjected to severe test in the factories and the firm claims that they so average that not one in a hundred is returned for re-adjustment.

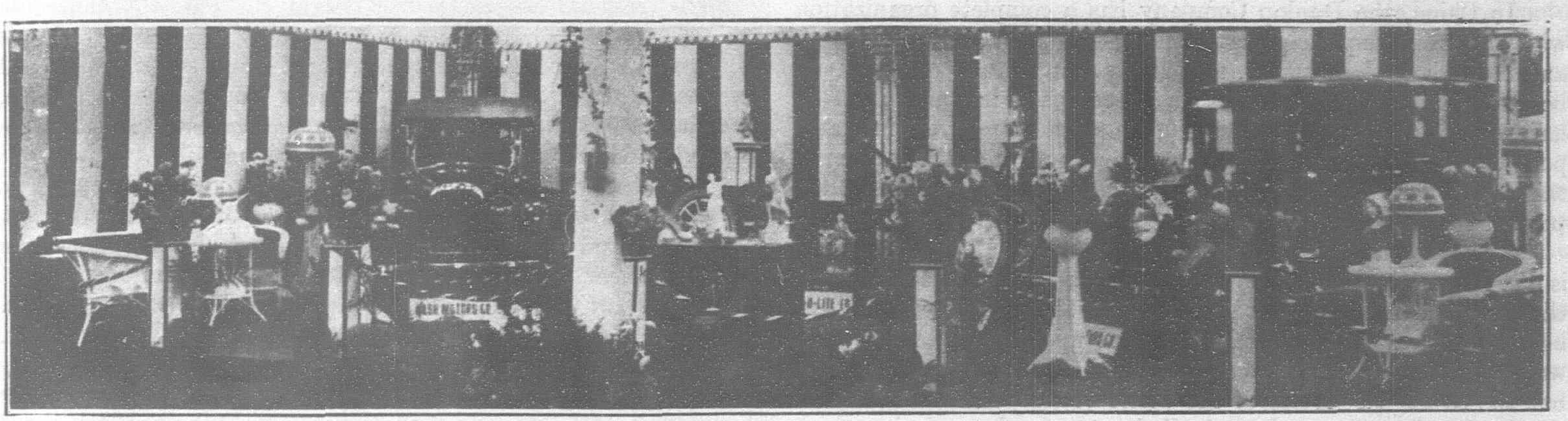


Exhibit of the Wan Chang Trading Company

The Dunlop Rubber Co. (Far East), Ltd.

STAND No. 33

THIS stand has a complete line of the well-known Dunlop tires. The Dunlop Company was one of the first to enter the Far Eastern automobile field and has its own factory at Kobe, Japan, which supplies much of the Eastern Asiatic trade. The works and plant at Wakinohama, near Kobe, are one of the best equipped in this part of the world, employing over 1,000 Japanese workmen under direction of foreign experts. The Kobe factory and office are the manufacturing and distributing centres for the Far East. Here they act as contractors and suppliers to the Japanese arsenals for general rubber goods. In addition to tires and other mechanical rubber goods the factory turns cut specialities for the chemical and surgical trade and meet with a large and increasing demand not only in Japan but other Far Eastern countries. In tires alone over 300 different varieties or sizes are manufactured at the head works in England, and stocks to the value of over $10,000,000 gold are constantly carried, in order to meet the demand for any special sizes. It is a great enterprise.

The story of Dunlop is the story of motoring. When Mr. J. B. Dunlop in 1888 invented the pneumatic tire, no one foresaw what an astounding revolution the invention would make in the world's locomotion. The invention of the Dunlop tire made motoring possible, and in doing so laid the foundation of one of the world's greatest industries.

The growth of the Dunlop organization, the pioneer company, has been phenomenal, and each succeeding year has brought forth new achievements. The capital of the company has had to be doubled and trebled in the last few years to enable the Company to carry out the big developments necessary to meet the ever-

growing demands for its products. To-day it can be said with justifiable pride that "the sun never sets" on the Dunlop factories, being, as they are, situated in almost every country under the sun.

In China, the Dunlop Company has a complete organization with offices in the principal cities and agents throughout the length and breadth of the country, and without any exaggeration it can be said that the establishment of the company in China in 1909, has, in no small measure, fostered the spirit of progress in transportation which is so essential to the development of the country—this can be seen in the nation-wide demand for better roads at the present-time.

To a large extent the success obtained by the Dunlop Company is due to the inherent quality of its products, it having always been the constant aim and care to place before their customers the very best tires that the most scientific and up-to-date plant in the world could produce. It is not the achievement of a single tire, but the average behavior of the whole output that has won for the Dunlop Company such unrivalled success and popularity which it now enjoys, and with the firm determination not to rest on its laurels but ever constantly to strive after "something better than the last" the company intend to maintain the proud position of being the first tire company in the world, and increase their prestige as time goes on.

The display Dunlop Rubber Company, in addition to the large assortment of tires and accessories, has an interesting assortment of wire wheels, including special wire wheels for the Ford.

Many of the handsome new cars on the floor of the show rest upon the splendid tires manufactured by Dunlop Rubber Company, which have been furnished by the local distributor.

* * *

John I. Thornycroft & Co., Ltd.

STAND Nos. 34, 35

THE exhibit of this company is undoubtedly one of the best that we have seen anywhere and excels in engineering interest all the other stands in the show. Foremost in the eye is one of the new railless electric passenger cars for the Shanghai Tramway Company, with aluminium car body, Thornycroft chassis and wheels, equipped with motors from the English Electric Company and Dunlop tires.

The railless electric petrol freight car was a standard 40 h.p. "J" type four-ton Thornycroft chassis, which had an electric motor placed behind the gear box, for driving either by internal combustion engine or by electric current from an overhead wire. The chassis was jacked up in order to demonstrate to visitors the method of control and running of both systems.

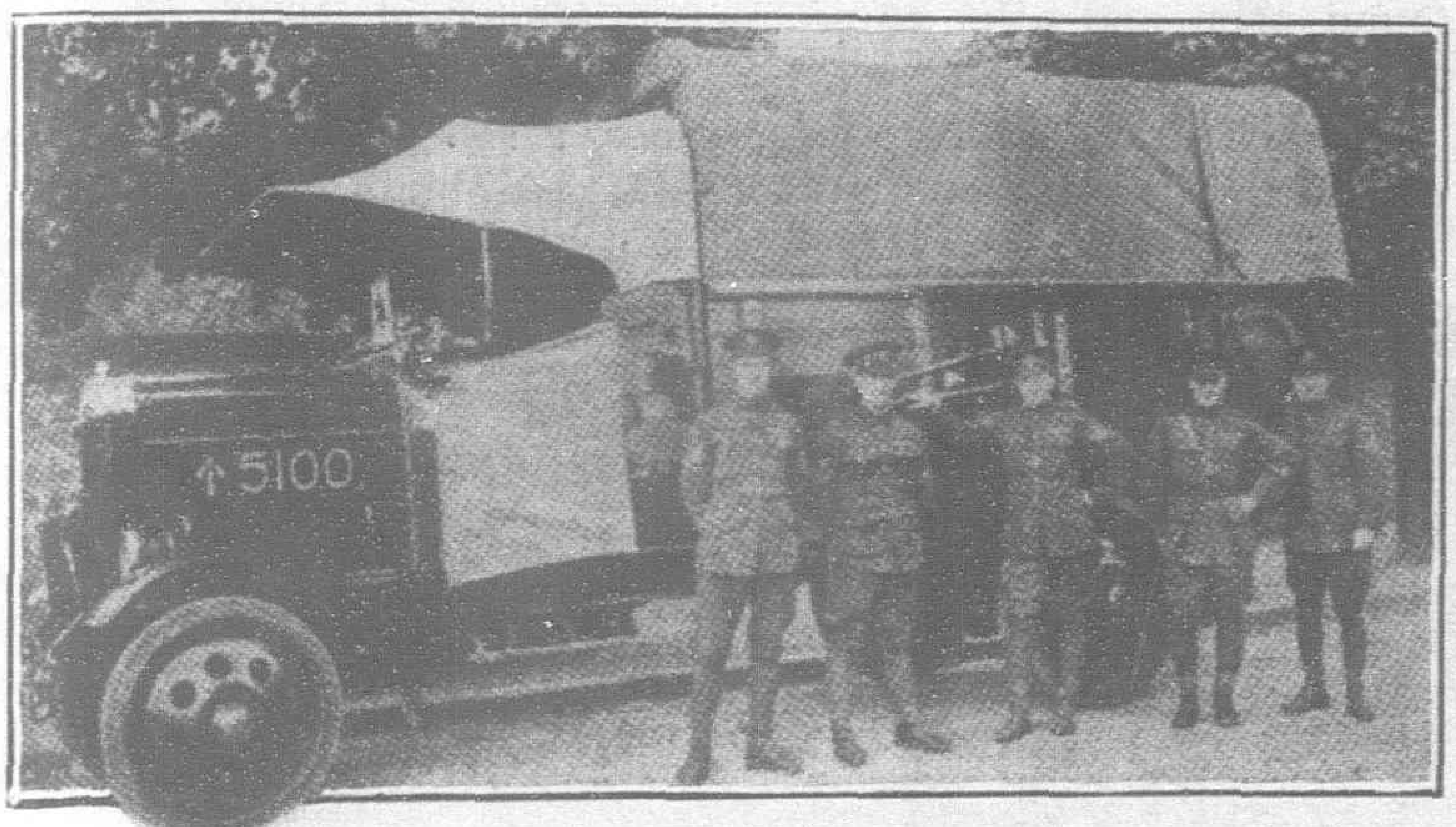
The four-ton, 40 h.p. "J" Thornycroft truck supplied to Messrs. Caldbeck, Macgregor & Co. was the only complete truck in the show and has been in constant use since May 1919 and from all appearances, one would think that this was entirely new.

Two Thornycroft marine motors were exhibited, the 30 h.p. and 50 h.p., each fitted with reducing reversing gear, which Messrs. Thornycroft claim to be the most suitable for propelling fishing boats, tugs, barges and house-boats. Alongside the 30 h.p. the standard outfit comprising shafting, stern tube, propeller and full set of spares showing their massiveness and workmanship.

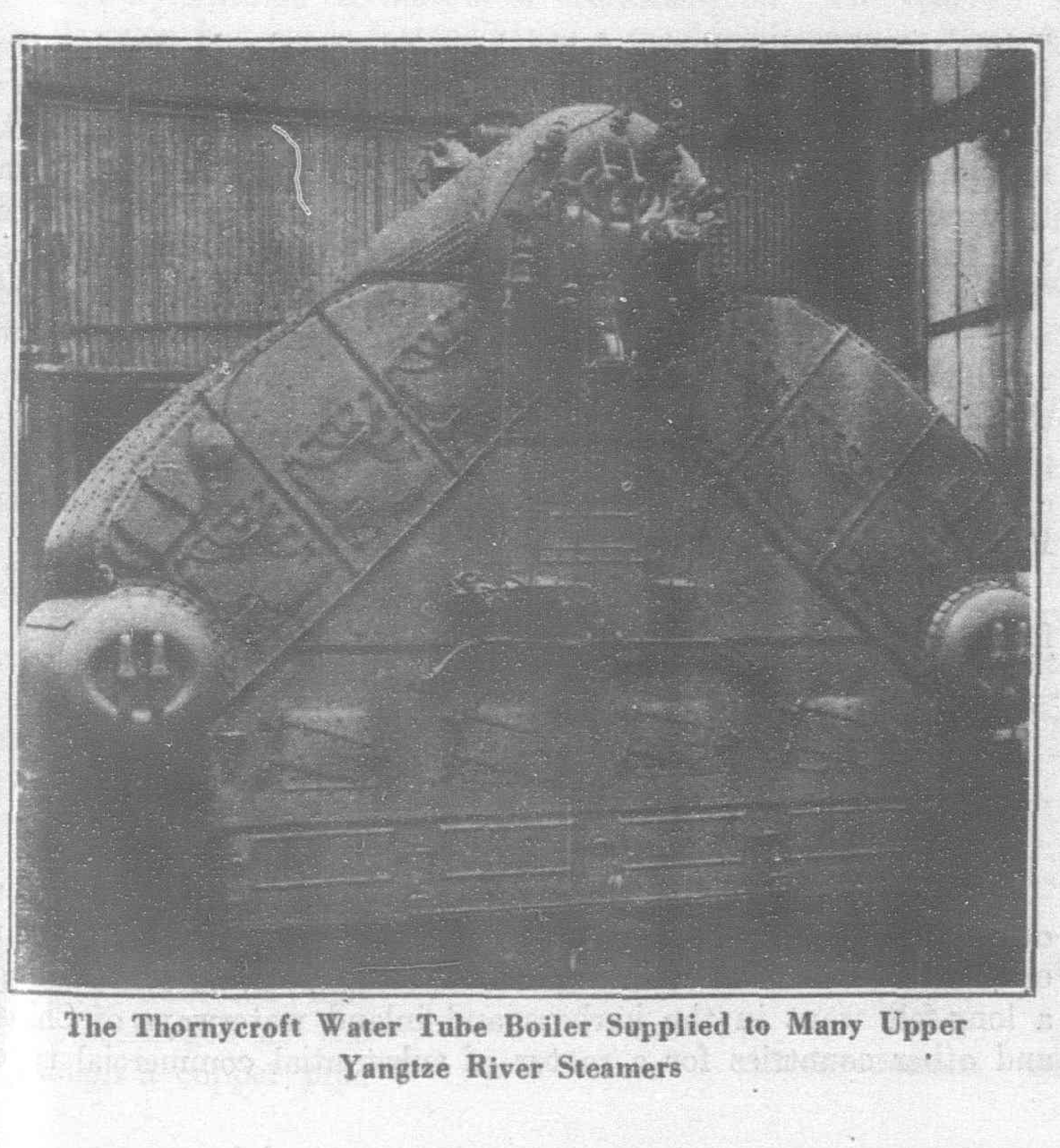
Models of patrol launches of various types and the railless tram car attracted much attention and interest, also the propellers and large photographs of marine water-tube boilers, twenty of which have recently been supplied to shipbuilders in China.

A photograph of Sir John Thornycroft, the founder of the firm, was displayed together with other views of coastal motor boats and flotilla leaders of the British navy, constructed by this firm.

Thornycroft is pushing the sale of their motor trucks in China and the Far East and have already achieved great success. Over 5,000 of these trucks were supplied to the British army in France and made a wonderful record for efficiency. One of the first of these vehicles, dubbed by the soldiers "Old Bill" Thornycroft, arrived in France in November 1914 and was continually employed on the western front up to the armistice. It followed up the advance, was the first British lorry to enter Germany and subsequently won first prize in the Rhine army show at Cologne in August 1919. A truly wonderful record, one that the makers are justly proud of. The Thornycroft motor truck has made many friends and large numbers of demobilized transport officers and men, of which there are a large number in the Far East, are earnest "Rooters" for their old and tried friend of the trenches. The Indian, colonial and foreign markets are absorbing large numbers of these vehicles, and to meet the difficulties of shipment, the chassis and vehicles are sent abroad in pieces packed in the smallest possible space. In India the demand for trucks became so great after the war that a subsidiary company called the Thornycroft (India), Limited was formed and works erected at Calcutta to handle this business and urgent orders from Eastern Asia. To give service to purchasers extensive repair depôts have been established. One of these is in Shanghai. The scope of these trucks covers every possible use that can be put to a car. Motor omnibuses, municipal motor vehicles for all kinds of cartage, anti-aricraft mobile gun wagons, double decked buses, lorries, sightseeing cars, etc.



"Old Bill" Thornycroft

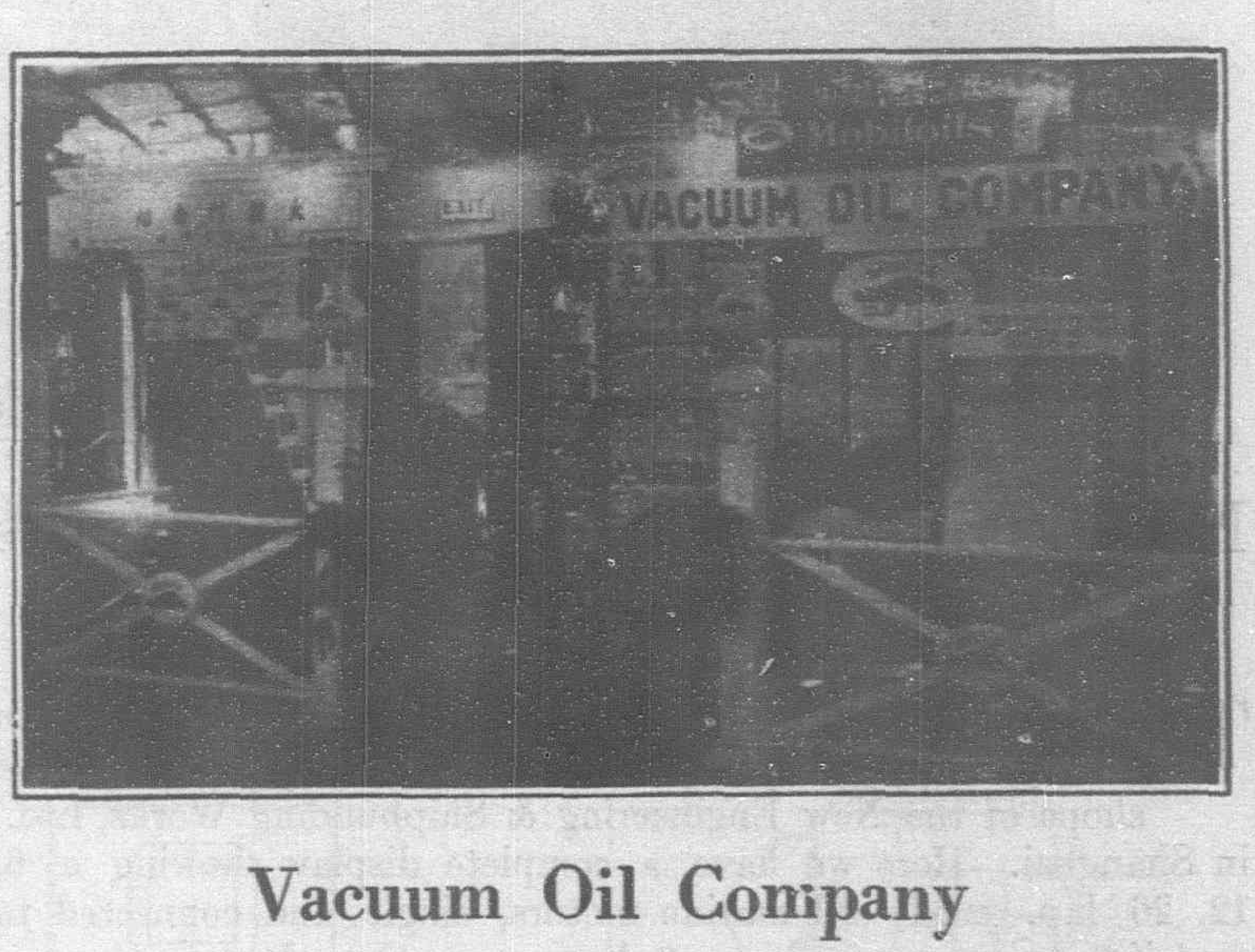


The Thornycroft Water Tube Boiler Supplied to Many Upper Yangtze River Steamers

The Thornycroft war record is unsurpassed by any firm in the world. They were one of the first to sense the need of transport and submit vehicles for trial and the first to have a subsidy truck in active service. Their trained engineers helped to build up the great mechanical transport service of Great Britain. From the outbreak of war the government made call after call upon the Thornycroft works for trucks, and the chassis was selected as the one to be fitted with anti-aircraft guns. Special designs of cars were made for the Indian transport service, for Italy, Salonika, Egypt and South Africa. One of the records achieved was a lorry which accompanied the naval expedition which went from the rail head on the Cape-Cairo railway to Lake Tanganyika early in the war.

As in motor trucks, so with their famous launches, which were also used in all parts where British forces were fighting. In Africa and other parts, these boats have been taken through virgen forests to be set up on the inland waterways. Destroyers, coastal motor boats, transport vehicles, ammunition lorries, anti-aircraft mobile guns, depth charge throwers, submarines, salvage tugs, boom defence vessels, R.A.F., seaplane tenders and patrol boats, were turned out in big numbers. The submarine *E33* built by them proved most reliable throughout the war; their big repair department at Southampton fitted out many ships and "doctored" many others: they designed and built a special type of "Q" boat, based on their experience of tunnelled stern river steamers. Thus they rendered great assistance.

For peaceful commercial use they have their river steamers, motor boats, motor lorries and many other products to offer. The reputation they have earned under great stress, will carry them far in China, a formidable competitor to others.



Vacuum Oil Company

STAND Nos. 34, 35

EXHIBITING their various brands of "Gargoyle" oils for all kinds of lubrication. There is little to say about these well-known and widely advertised products, except perhaps to invite attention to the wonderful expansion in their use in China under the able management of Mr. Hallam, who, over a period of years, has built up this business to its present grand proportions.

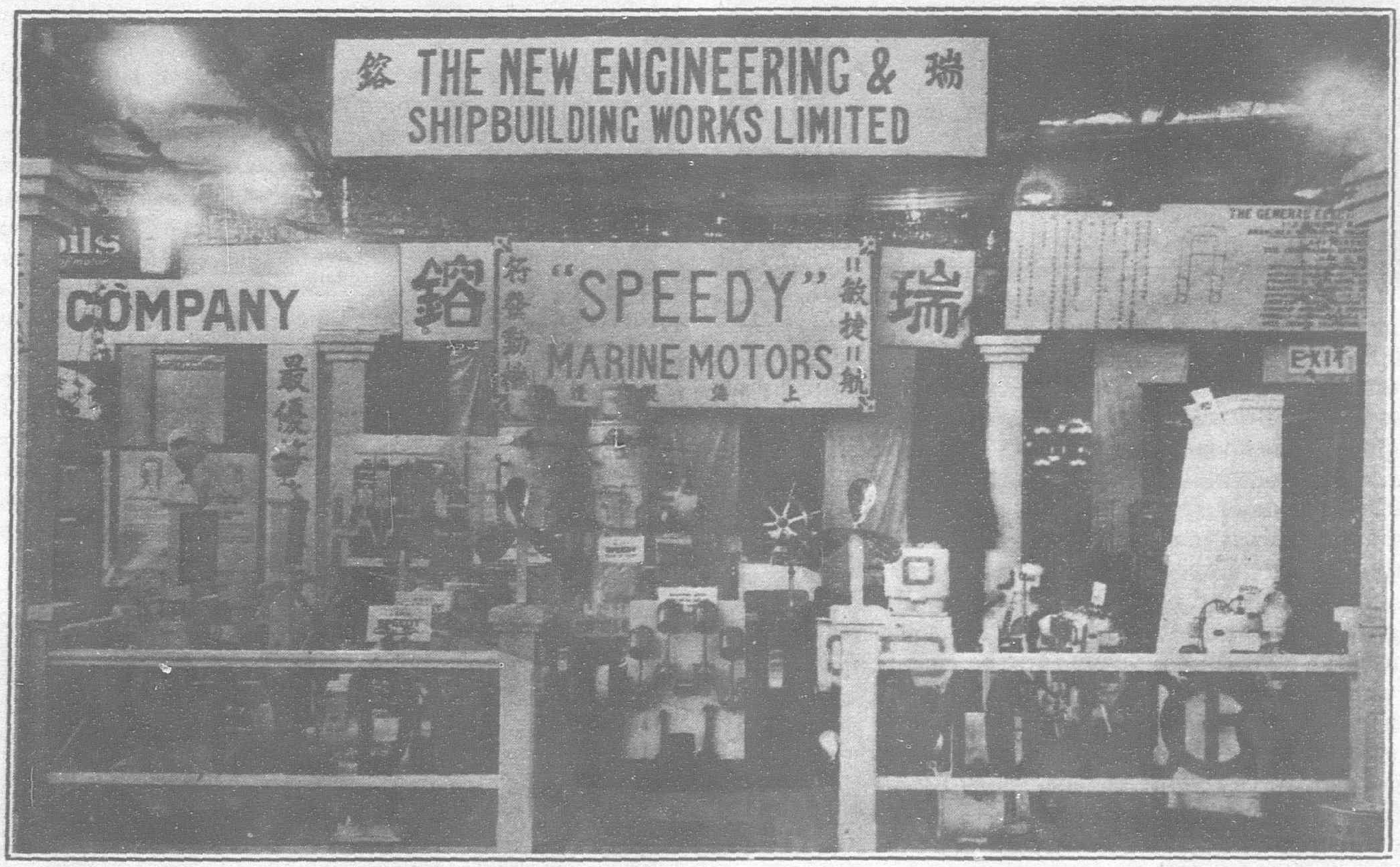
The Vacuum Oil Company has four plants, two in New Jersey, and two in New York.

The largest of the company's refineries is the one in Paulsboro, New Jersey.

A few years ago the site was a peaceful homestead on the river bank. It now presents quite a different view. Numerous tanks and buildings arise around it. Along what was once a sloping beach, there is now a modern concrete bulkhead more than a thousand feet long, with depth of water sufficient to provide berths for the largest tank steamers afloat. There are in the tank farm now one hundred supporting tanks with capacity of over a million barrels. By remarkable engineering feat, a pipe line under the Deleware River connects these tanks with large trunk lines from the Pennsylvania oil fields. Roads have been made through the plant and about three miles of railway trackage laid, to permit of placing cars in various departments to avoid rehandling of material, and thus speed up production.

Vacuum's other three plants turn out millions of barrels of oil every year. The four plants comprise in all an area of territory equal to a good sized county.

This enormous development is cited by the Company as certain proof of the merit of Vacuum products.



New Engineering & Shipbuilding Works

STAND No. 37

THE greatest surprise of the Shanghai automobile show is in the exhibit of the "Speedy" marine motors manufactured at the shops of the New Engineering & Shipbuilding Works, Ltd., in Shanghai. Here we have a complete display showing a 6, 12, 26 h.p. crude oil marine motors, single and connected to centrifugal pumps and a 3 kw. generator. It comes as a revelation even to old-timers in China to find that such remarkable progress has been made in quantity engine building right here in Shanghai. We have seen some of the excellent motors made at certain British shops in Hongkong and many of the inferior imitations turned out by the Chinese in Canton, but the product of the Shanghai company, outclasses all others made in China. In a market that imports marine motors from all the manufacturing countries of the world, it would seem that the New Engineering and Shipbuilding Works have started a competition that must be felt in the future. Proper advertising and salesmanship should create a demand for these motors, that will bring increasing returns to the makers.

Many of these marine motors are now in active service throughout the inland waters of China installed on some of the finest launches owned by the large trading companies. The first foreign boat to travel in the Grand Canal above Tsingkiangpu and the first to penetrate the waters of the Yellow River was the 50-foot Standard Oil Co.'s motor launch *Mei Foo XV* which experienced all sorts of difficulties during the eventful journey. But one foreigner, the assistant marine superintendent of the Standard Oil Co., was on the *Mei Foo XV*. Soldiers stopped the motor launch several times and difficulties were encountered because of low water, although the *Mei Foo XV* draws but 18 inches. At Hanchwang, the lock keeper refused to open the gates to allow the boat to enter Shan Lake after soldiers had stopped the launch. One lock was found open and after three anchors were laid, 100 coolies hove the launch through the lock.

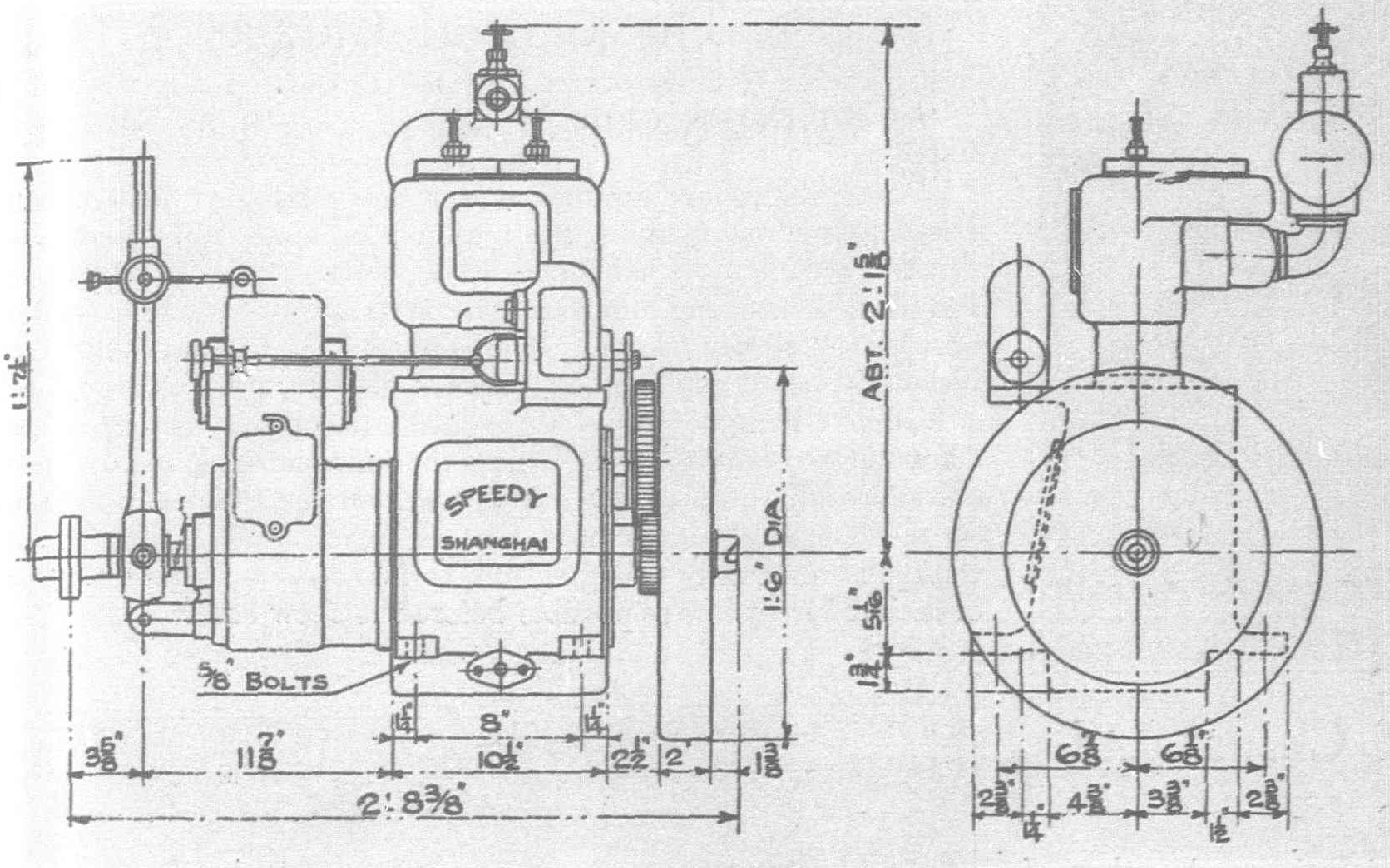
When grass stopped the engines, a sail made from awnings carried the launch along until a junk was obtained as a tow. At Tsining 100 coolies dragged the boat over a shoal. During the trip in the Grand Canal, and later in the Lu Ho Canal, the ship's company built dams every mile to effect a rise in the water. A native boat was sunk across the canal which reinforced a dam built of mud and kaoliang: the water was thus stopped and rose and the *Mei Foo* was able to proceed. From An Shan to the Yellow River, coolies tracked the launch ten miles in six inches of water which covered mud a foot deep. At times the coolies were up to their waists in mud and water and many were exhausted by the labor. They were taken on board the launch and given treatment. From Tsinan to Shanghai, the launch bucked heavy seas during the trip to the Gulf of Pechili and rounding the Shantung Promontory.

The principal dimensions of the M. L. *Mei Foo XV* are as follows:

Length over all	50-ft.
Beam	11
Draft	2-ft. 6-in.
Gross tonnage	25.1

ENGINES.—Two eighteen h.p. speedy motors.

A short description of these motors will not be out of place for our readers and home manufacturers. The makers say in their circular that "in introducing the speedy motors we are filling a long-felt want in the harbors and inland waterways of China and other countries for a motor of substantial commercial type



DIMENSIONS OF 6 H.P. "SPEEDY" MOTORS

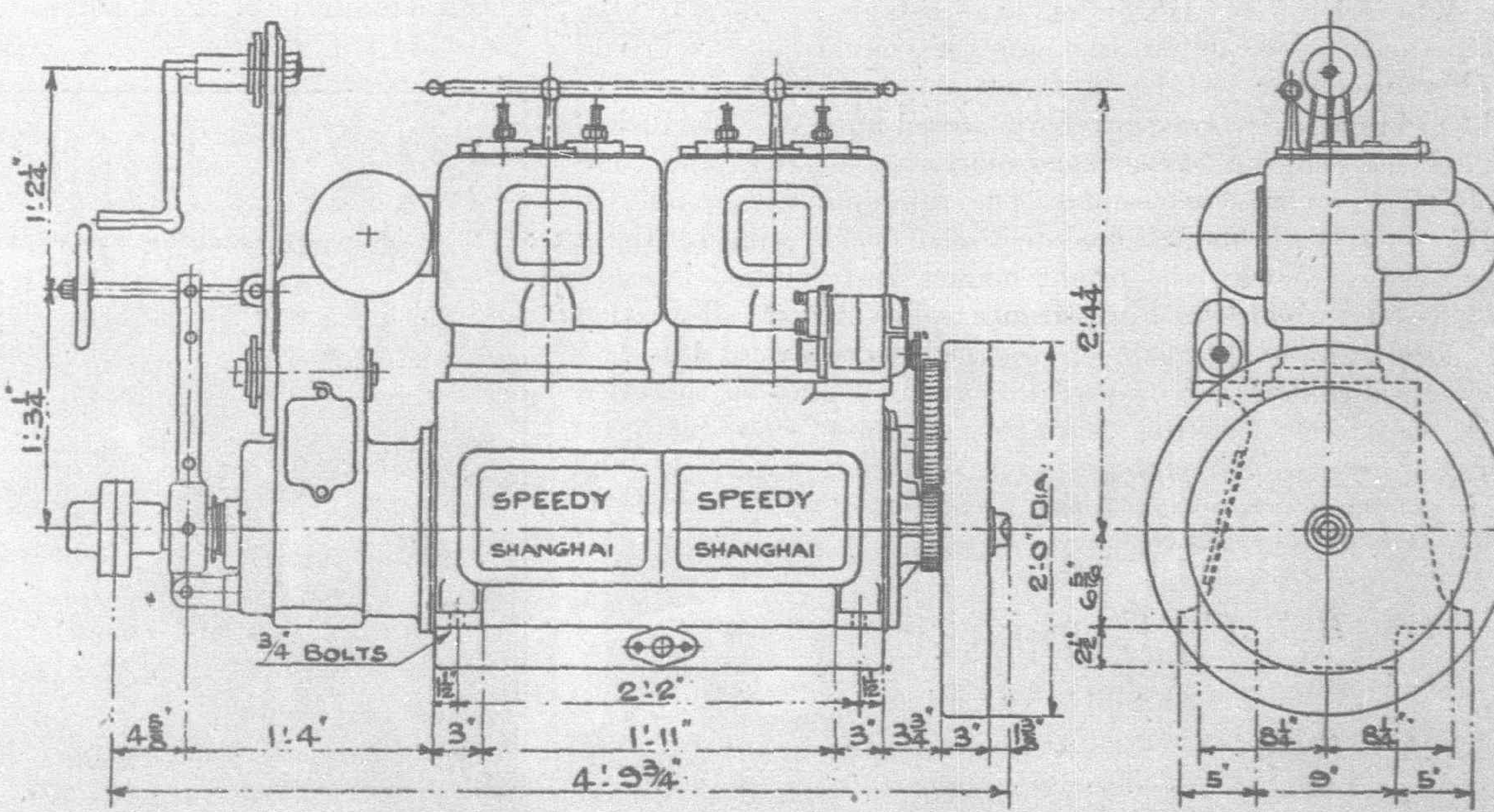
where motors have to be handled by native labor and operated on the cheapest grade of oil. Our belief in moving with the times is to improve in designs and thus endeavor to give our purchasers the latest and best engines obtainable.

"Briefly we place before our clients the outstanding advantages of this motor. The all important feature being the successful running and correct lubrication of moving parts. In China, as is well known, we have to meet the two extreme temperatures and to deal with this, the system of lubrication being splash, we have adopted the following method:—A water jacket is cast on the bottom of the crankcase which is connected directly to the sea or river and through which all the circulating water passes, in doing so it cools off the lubricating oil (which becomes heated through the lubricant coming in contact with the hot piston and cylinder walls), therefore the lubricating qualities of the oil are unimpaired. The crankcases are divided into separate compartments for each two cylinders, each chamber being fitted with ribs in such a way as to cause a continual circulation of lubricating oil. The centre or middle main bearing is fastened into a machined recess in the centre of the crankcase with eccentric washers making it adjustable and all main bearings are lubricated internally by wire ducts. The crankshaft is fitted at both inside ends with ball thrusts which keep the connecting rod bearings and pistons in perfect alignment, thereby enabling the engine to be placed at any reasonable angle.

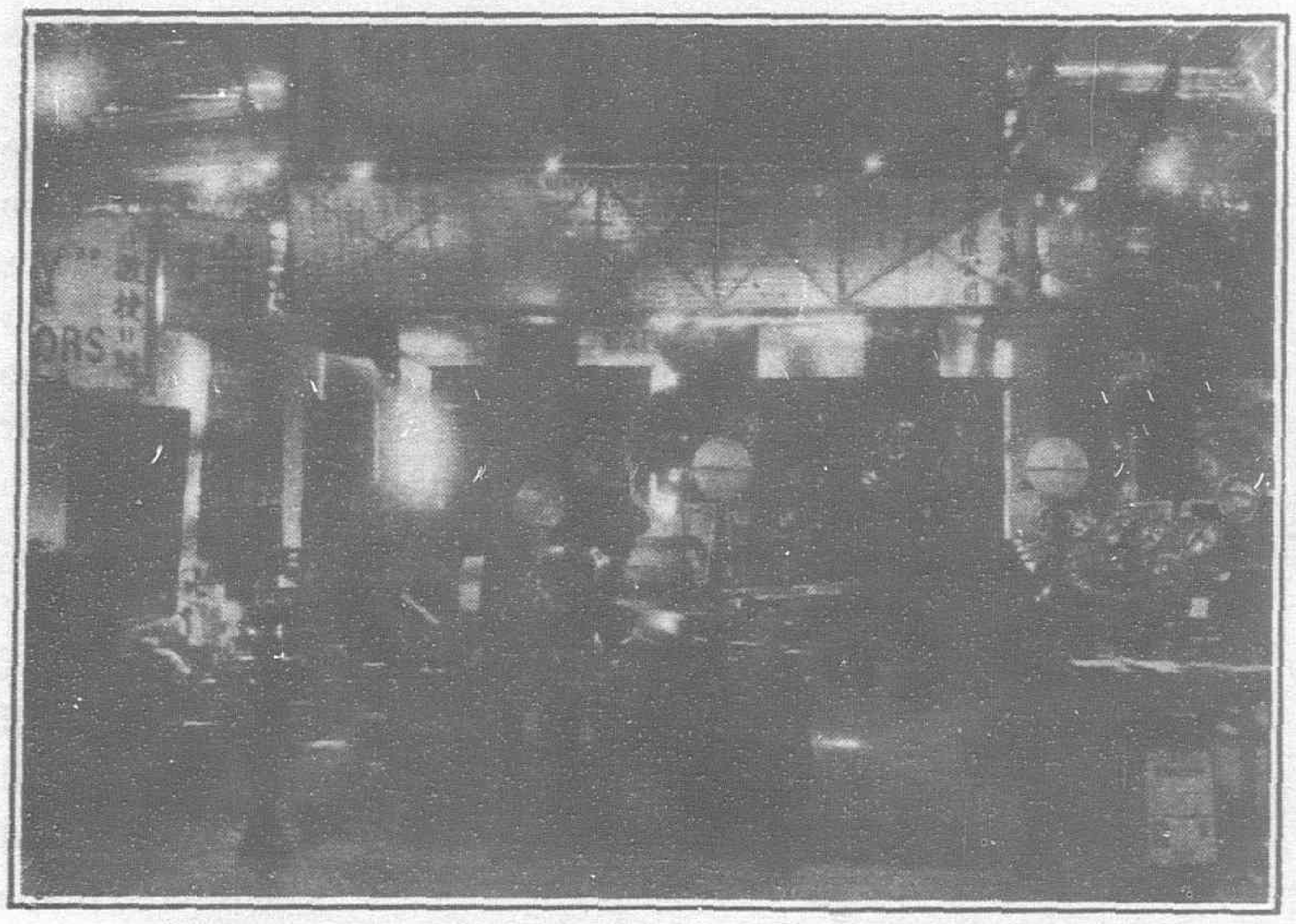
"The circulating water is drawn from the water jacket at the base of the engine by circulating pumps and discharged into a copper pipe common to all cylinders, entering the cylinder at the bottom of the water jacket around which it becomes deflected and is then discharged at the top through a copper pipe into the silencer. With this system it is impossible to have one set of cylinders hot and others cold. Again, the circulating water discharge pipe standing well above the tops of cylinders makes it impossible to create a steam pocket to interfere with the successful circulation of cooling water which might otherwise exist. On each pump telltales are fitted which indicate at a glance if all the pumps are working.

"Speedy engines start direct off the magneto without the aid of coil or accumulators. The reliability of the "Speedy motors" which have made them so successful in the past, is due to the above facts as also that the best of material and workmanship is put into the entire construction, and in their manufacture. It is not our desire to compete with the cheapest makes of marine motors, but to give our purchasers the best value obtainable for full power work without expensive breakdowns and repairs.

"All speedy motors are manufactured in Shanghai thus ensuring the replacement of any requisite spare parts at all times and prospective customers or their interested parties are invited to inspect these engines in course of construction and receive practical demonstration of what these engines are capable of accomplishing. These engines are made in various grades of horse-power ranging from 6 B.H.P. upwards and are particularly adaptable for small and large motor boats, houseboats, ferry launches, tugs, etc. A large number of speedy motors have already been supplied to leading firms and residents in Shanghai and elsewhere in China, where they have given entire satisfaction, amongst whom we may particularly mention the Asiatic Petroleum Co., Ltd., Messrs. Butterfield & Swire and the Standard Oil Co. of New York."



DIMENSIONS OF 26 H.P "SPEEDY" MOTORS



General Electric Co. of China, Ltd.

STAND No. 38

THIS exhibit is also one of general engineering rather than of interest to automobile lovers, although many of the specialties are shown for the equipment of garages. Here is seen a Crossley Brothers' gas engine direct connected to a General Electric generator, with General Electric of China panels, motors, ventilators, etc. A Petter generating set; Osram lamps, accessories, Pax saw blades, projectors and belting of all kinds.

* * *

China Mutual Trading Company, Ltd.

STAND No. 39

THIS exhibit is confined to an all-British-made Albert car, with the following specification: 11.9 h.p., four cylinders, 68 by 103 mm. (1,496 c.c.) fully forced lubrication, leather cone clutch, four speeds, separate gear box, straight bevel back axle drive, quarter-elliptic front and canti-lever rear springing, 760 by 90 mm. tires on steel wheels, C.A.V. electric lighting and starting.

This is a car of moderate engine power which must prove adequate and efficient for all practical purposes for which a light car will be used. Interchangeabilty and standardized accuracy of all parts is an outstanding feature. Particular attention has been given to accessibility of all important parts. The clutch, brake and accelerator pedals are made adjustable for reach and the standard body gives ample room for the comfort of the driver. The four-speed gear box has a three point suspension, and the gear hand brake levers are centrally mounted upon it. The dickey seat is of the "sunken" type, handsomely upholstered, and comfortably accommodates two people. The aluminium body is finished in light grey, with detachable steel and black wings. Nickel fittings harmonize with the bright honnet and polished interior, has a pleasing stream-lined appearance. The Albert all-weather patent convertible body has been designed expressly for the 11.9 chassis and is constructed on the same graceful lines as the other models, completely meeting the needs of those who desire for winter motoring a body draughtproof, snug and watertight, and in summer, one which mitigates the discomfort of dusty roads.

* * *

C. E. Sparke

STAND No. 39

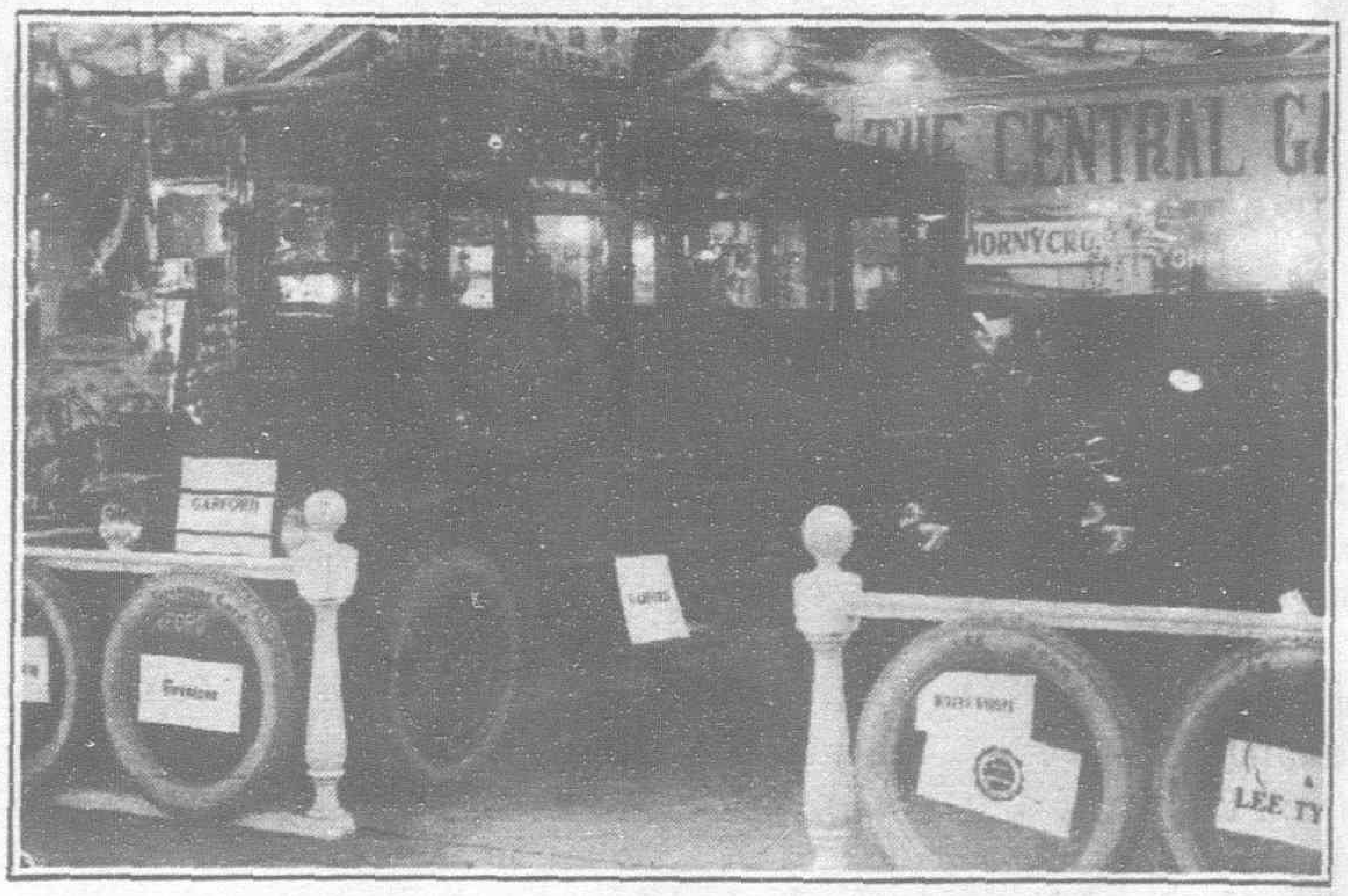
Advertising the Excess Insurance Company

MR. Sparke, as the agent of this company, says that they have settled over 1,000 motor car claims in Shanghai which is proof of the popularity and efficacy of the famous 'XS' policy.

The Central Garage

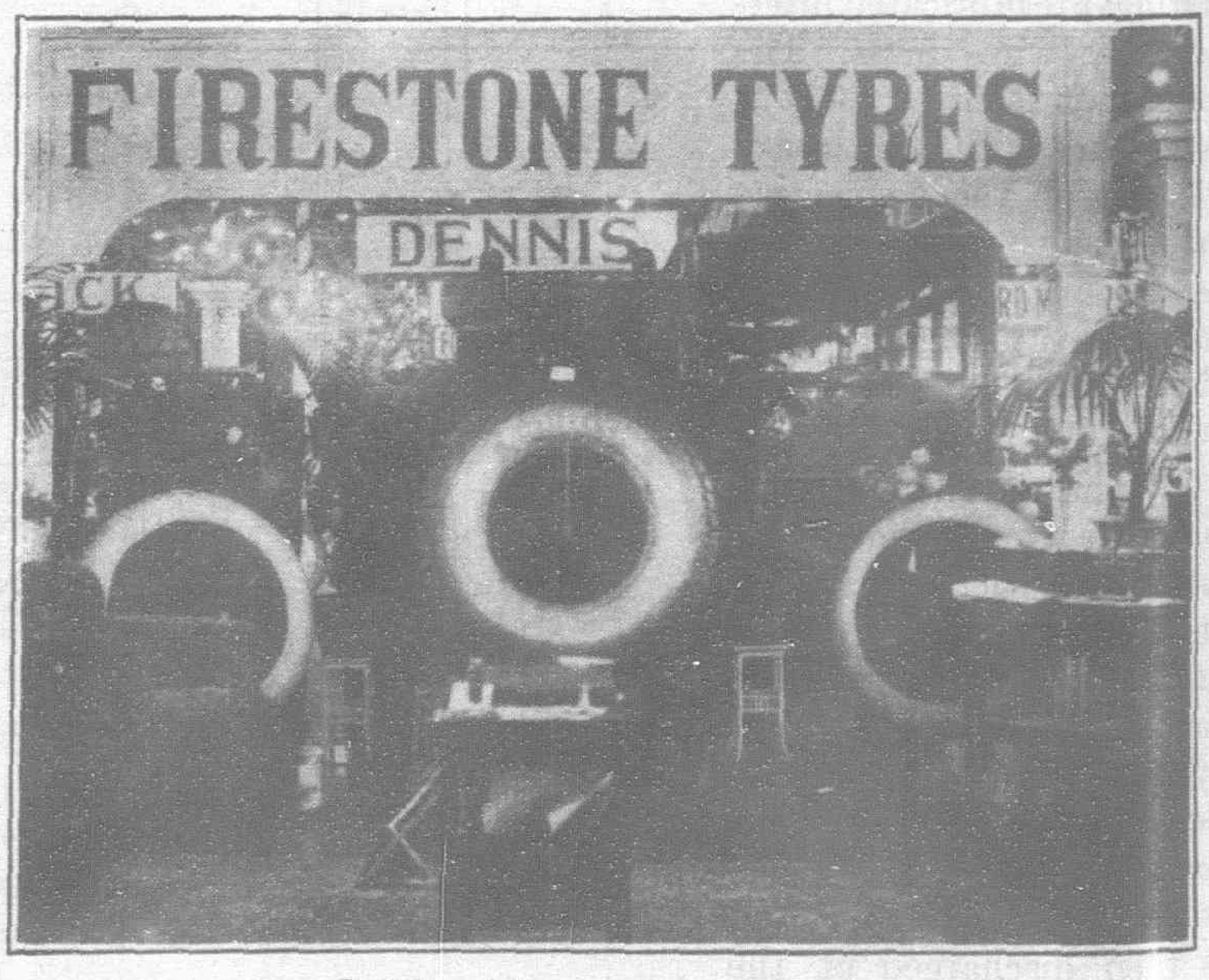
STAND Nos. 40, 41, 42, 43, 47, 48, 49, 50

IN these stands are grouped a wide assortment of British and American cars, truly international in make up. Here are Willys-Knights, Chalmers, Austin, Morris-Oxfords, Sunbeams, Templars, Armstrong-Siddeley, Overlands, Detroit Electric, Morris-Crowley, Wolseley, Angus Sanderson, A. C. Ditton Light Car, Federal, Garford and Dennis Trucks. The feature of this exhibit is a Willys-Knight chassis with exposed working engines, which attracts large crowds, and even to the uninitiated is an education on the working of a motor, not to mention the Chinese who learn for the first time something of how an engine works. The Central Garage is constantly changing its exhibits so as to display as many of their different cars as possible before the show ends.



Garford Truck Exhibit of the Central Garage

The Willys-Knight types shown are the five-seater touring car, five-seater sedan, two-seater roadster and a two-seater coupé. The Overland cars include a sedan, seven-seater touring car, two seater roadster, and a two-seater coupé. The Templar cars are a sedan, coupé and roadster. An exceptionally fine Armstrong-Siddeley, and a Detriot electric car are shown. There is also a Sunbeam, Chalmers, Morris-Oxford, and an Austin car on the floor. In addition to the cars, there is a Smith speedometer and a complete line of S. Smith & Sons, Ltd., British accessories.



Exhibited by the Central Garage

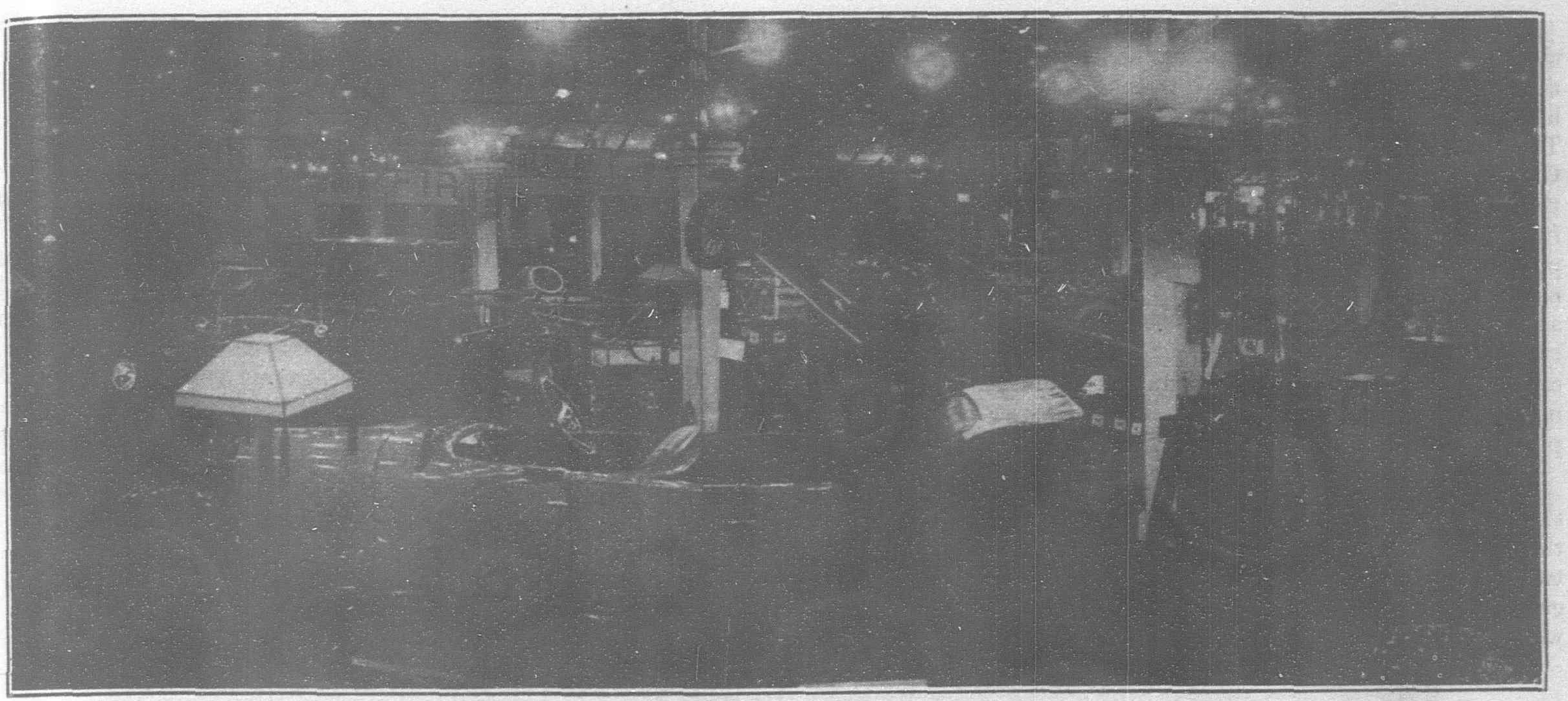
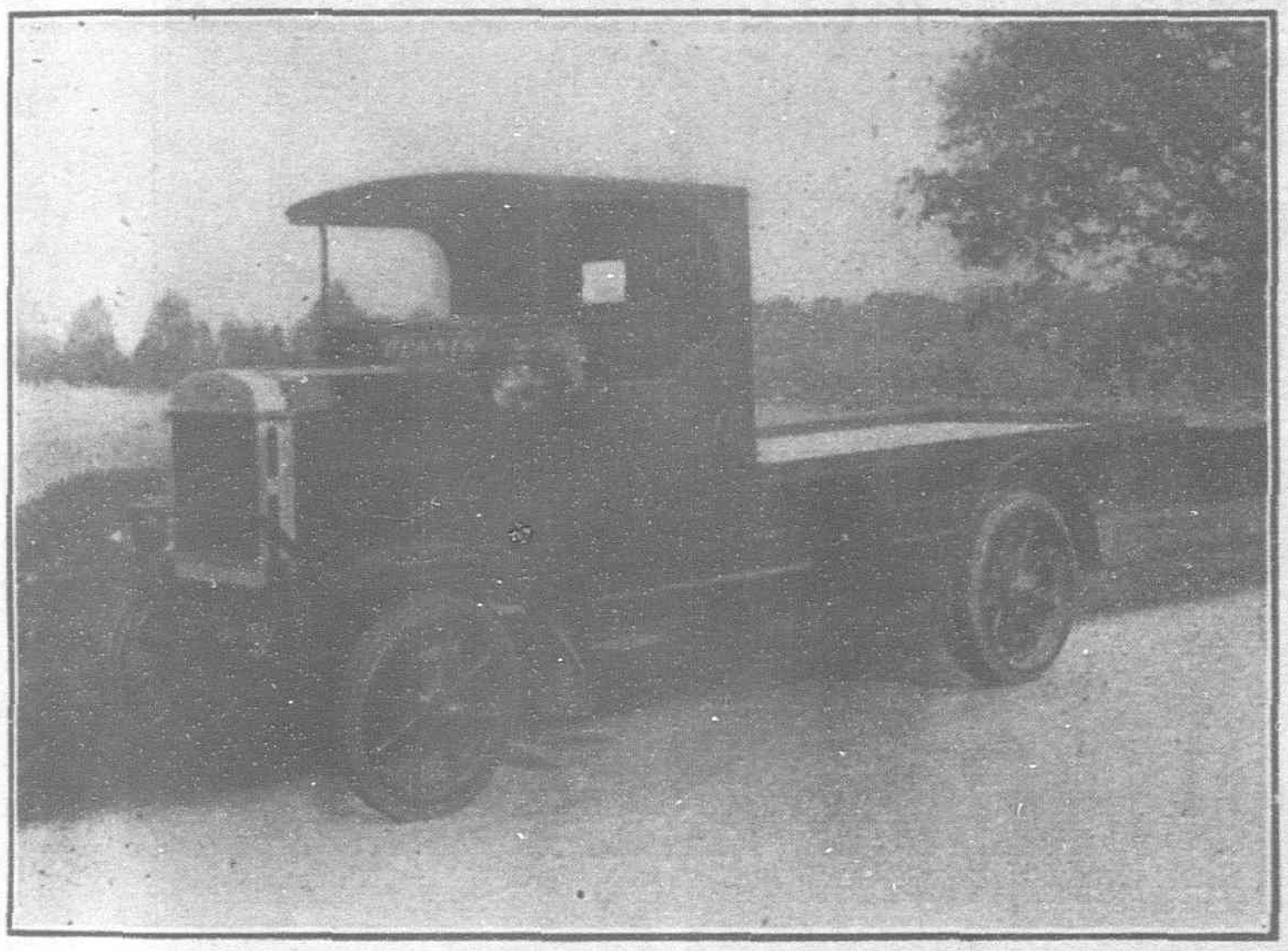
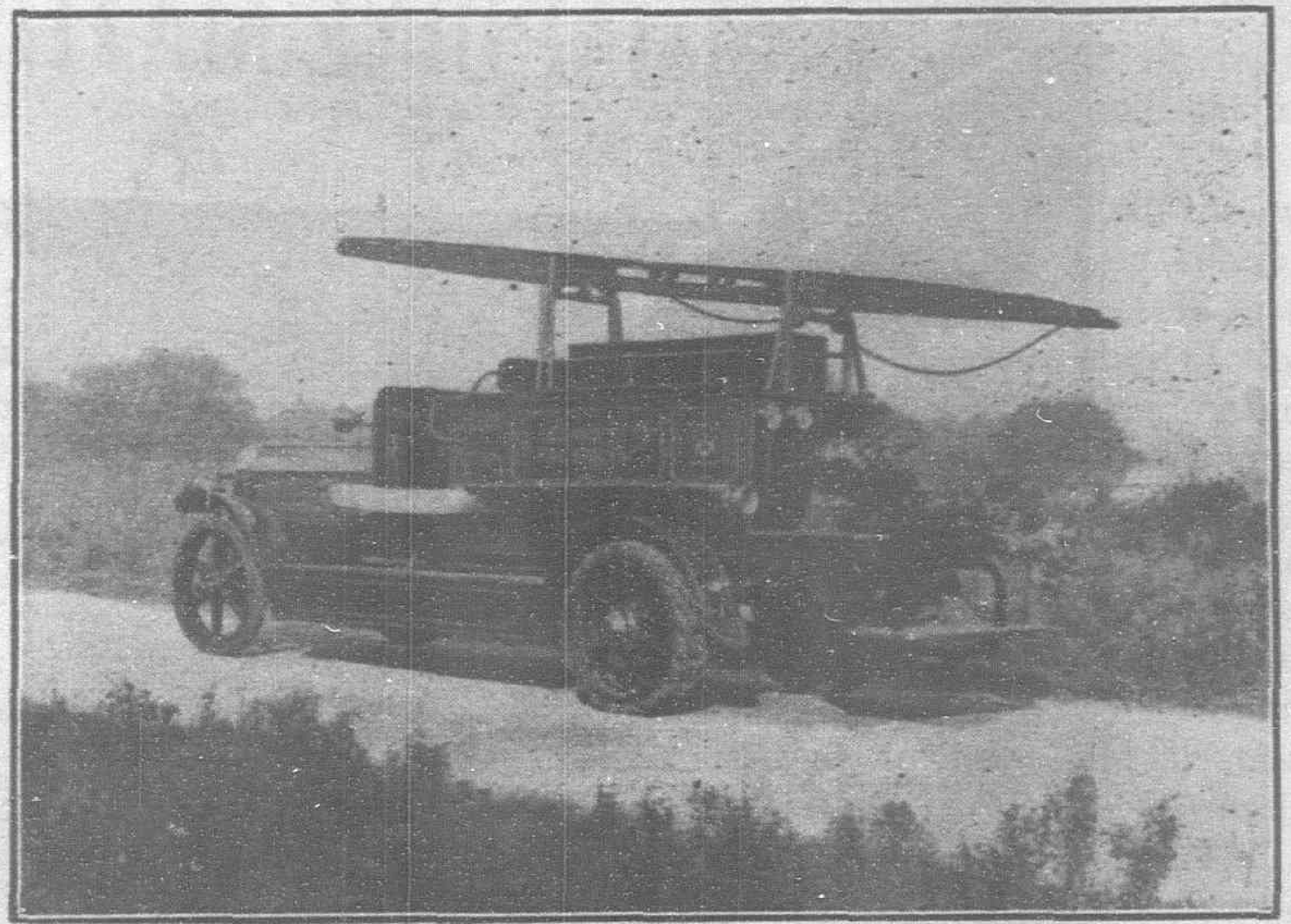


Exhibit of the Central Garage



"War Office Subsidy" Dennis 7½-ton Lorry



The First Motor Fire Engine to be sold to a Chinese Fire Dept. Several now in Operation

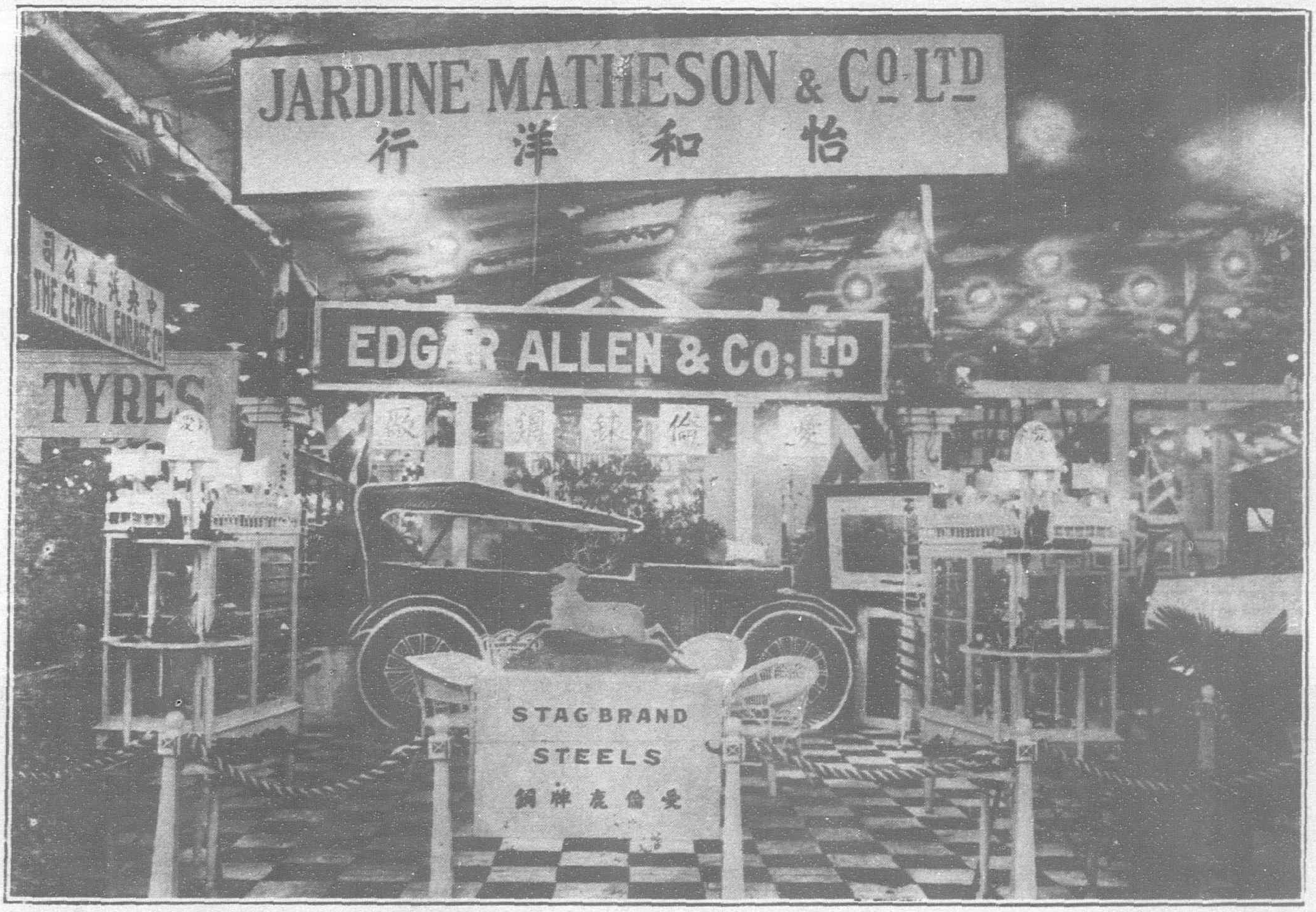
Exhibit of the Central Garage

One of the most interesting exhibits of the Central Garage is the famous Dennis 3-4-ton motor lorry, which was put on this market only last year when Sir Raymond Dennis passed through on his tour of investigating Oriental market conditions. Like the Thornycroft Company, the works of Dennis Brothers, Ltd., at Guildford, England, forged ahead during the war and took over their share of the great load in keeping the armies on the various fronts supplied with efficient transportation. A system of mass production was then developed and standardization of parts and models effected, which permitted rapid deliveries to the military authorities, who took over 7,000 of the 3-4-ton model alone. Special types were perfected for different work under varying climatic conditions, those for tropical countries being provided with the new "Colonial" radiator, which, by its greater cooling surface, prevents the water from overheating.

Messrs. Dennis Brothers originated the worm drive and were the first to adopt the turbine pump to motor fire engines of which they are the largest manufacturers in the world, standardizing on two models, 60 and 75 horse-power, with a capacity of 450 and 550 gallons per minute respectively. Large numbers of these machines were supplied to the British government during the war to safeguard important docks, stores and munitions factories. At the great Salonika fire two of these engines established the splendid record of operating continuously for eleven days and nine days respectively without stop. Over 200 Dennis fire engines are in use by the London fire brigade, and are installed in many of the important cities of the East, including Calcutta, Colombo, Singapore, Kuala Lumpur, Ipoh, Penang, Nanking and Tientsin. Several are in use by the Shanghai fire brigade.

The Dennis agency in Shanghai is held by the Central Garage and with the construction of good roads and municipal improvements the company expect a large and constant demand for their splendid and efficient products. The South China agency of Dennis Brothers is held by Alexander Ross & Co., Ltd, of Hongkong.

The Central Garage also displays the "Bosch" magneto.



Edgar Allen & Co., Ltd.: "Imperial" Steel Works, Sheffield

STAND No. 45

THE Edgar Allen exhibits at the Shanghai automobile show comprised some of the manufactures of the "Imperial" Steel Works steel department; namely "Stag Brand" special alloy motor car steels for the different parts of motor cars, special steel sheets for motor body work, high-speed tool steels, carbon tool steels, high-speed steel twist drills, reamers, and milling cutters, chisels, files, hammers, etc., all of which are called for and supplied to motor car manufacturers. In addition to the exhibits shown on the Edgar Allen stand, "Stag Brand" high-speed steels, twist drills and milling cutters were to be seen working on the machine tools of the working display of the Associated British Machine Tool Manufacturers. As will be seen from the illustration of the Edgar Allen exhibits "Stag Brand" cast steel files were shown to advantage in the design of a full sized motor car; among other exhibits was a large aeroplane view of the "Imperial" steel works, showing the different departments throughout the works, noticeably the steel foundry department one of the largest steel foundries in Great Britain where steel castings weighing from a few ounces to fifteen tons each are made. The railway and tramway departments wherein Edgar Allen "Imperial" patent rolled manganese steel rails, switches and crossings are made for railways and "Imperial" manganese steel points and crossings for tramways, all types of crushing and grinding machinery for mines, etc., including the manufacture of complete cement plants and colliery plants are the products of the engineering department. In addition to the manufactures of the steel department previously mentioned circular saws for cutting hot and cold steel, wood and slate, etc., also the press department for all types of steel pressings and forgings as called for by Messrs. Edgar Allen & Co.'s branch offices and agencies throughout the world.

The Motor Boats "Hatamen" and "Fook Shei" built at Jardine, Matheson & Company's Motor Boat Works at Pootung

Jardine, Matheson & Company, Limited, Marine Motor Department

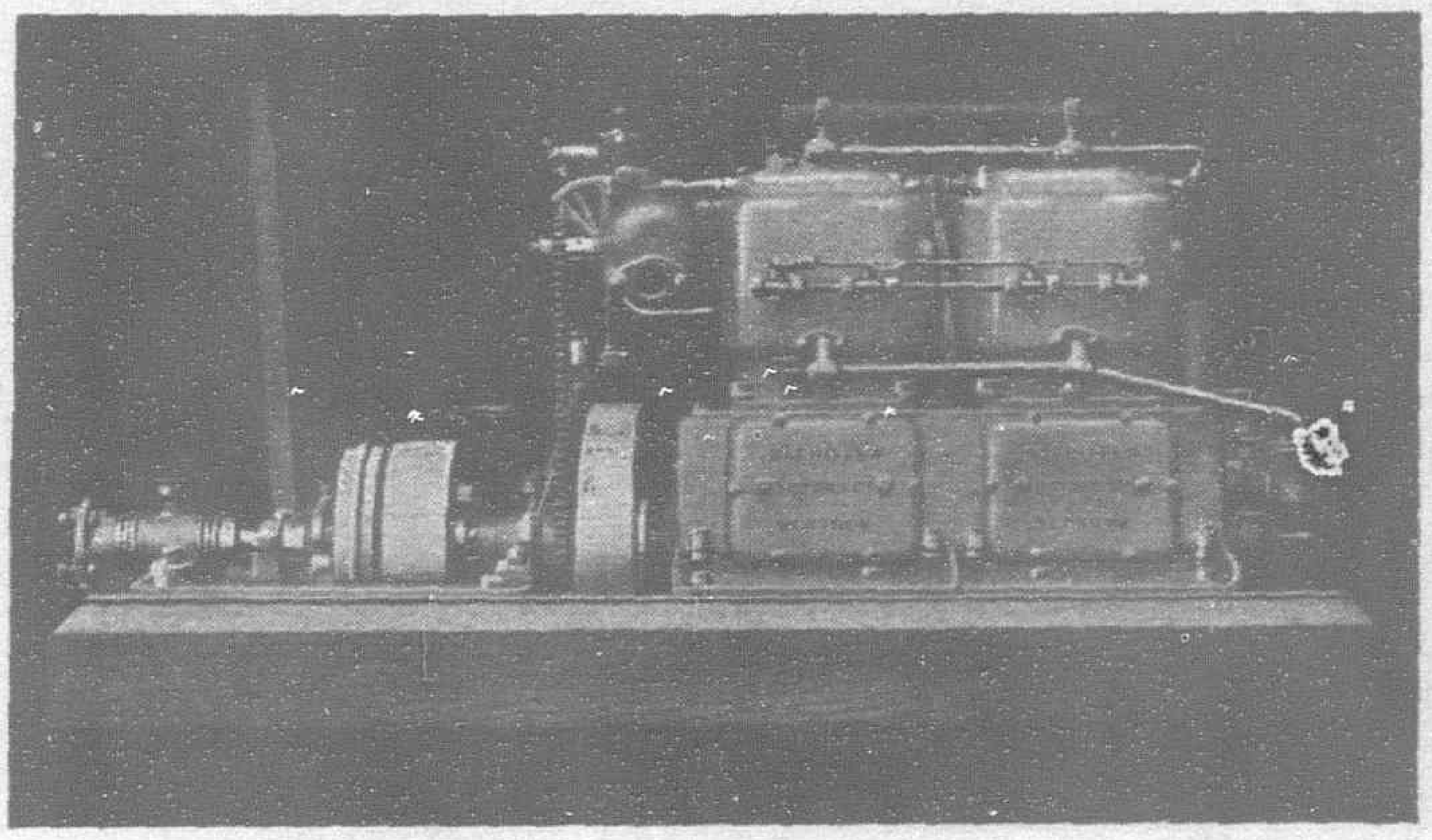
STAND No. 46

ONE of the features of the show: exhibiting a 20-foot four-seater motor boat runabout made in cedar wood and finished in white enamel with nickel-plated fittings operated by a Model "R" 50 horse-power, four-cylinder Stirling motor, guaranteed to make 20 knots or over. In addition, there is a 40-50 four-cylinder "Gleniffer" kerosene marine motor, which operates at 600-700 r.p.m. made by the well-known British motor specialists, the Gleniffer Motors, Limited of Glasgow. The model shown is a beauty, a remarkable example of finish and elegance, a high tribute to the makers. There is also a 9-12 horse-power four-cylinder "Universal" kerosene motor, from the Universal Motor Company of Oshkosh, Wis., which operates at 1,200-1,700 r.p.m. There is also a 20-30 horse-power four-cylinder "Frisbie" kerosene marine motor operating at a speed of 600-800 r.p.m. manufactured by the Frisbie Motor Company of Middletown, Ct. On the pond in the gardens is a 16-foot teakwood tender fitted with a 9-13 horse-power "Universal" motor, which has a draft of only 7 inches and a speed of 8 miles an hour consuming one gallon of kerosene per hour.

"Ewo's" Motor Boat Exhibit

Messrs. Jardine, Matheson & Company have long specialized on marine motors and motor boats, being one of the first concerns with the vision to look ahead and provide for this rapidly expanding method of transportation on China's inland rivers and lakes. Probably the most comprehensive stock of marine motors in the East is to be found in the marine motor works of Jardine, Matheson & Company, Ltd., at Pootung where motor boats of all sizes and description are constructed and overhauled. The motor yacht *Bee* herein illustrated is a splendid example of the excellent work turned out from this estab-

The Motor Boat "Bee" built at Jardine, Matheson & Company's Motor Boat Works at Pootung lishment. The *Bee* is a steel twin-screw vessel of unusually graceful lines and beautifully fitted accommodations with a cruising speed of eleven knots. To travel by boat in any of the beautiful waterways of the Yangtze Valley shallow draft is essential and our illustration of the *Hataman*, a 16-foot light draft tender, shows a launch with a speed of about eight miles per hour on a draft of only seven inches. The engine in this interesting little craft is a 9-12 horse-power "Universal" kerosene motor with a fuel consumption of less then one gallon per hour. This launch tows an ordinary foreign houseboat at about five miles per hour and makes an ideal tender. The *Fook Shei*, also illustrated, is another product of the "Ewo" works. She is a husky towing tender with a speed of nine miles per hour. The fast runabout exhibited on Jardine's stand, was a splendid example of first-class workmanship from the Pootung motor works and the three motors represented three distinct duties: the little 9-12 h.p. four-cylinder "Universal" for small light draft vessels, the 20-30 h.p. valve-in-the-head "Frisbie" for general utility and medium-sized craft and the 40-50 "Gleniffer" for continuous hard service in heavy duty boats. The Gleniffer, it may be mentioned, is one of the best known British marine motors with a magnificent war-service. They operate with paraffin, petrol, alcohol or naptha, and for heavy work have few equals. With China's labyrinth of waterways it is certain in that given settled conditions, the future will see considerable development in the marine motor industry and the marine motor department of Jardine, Matheson & Company with its experienced foreign staff will certainly figure largely in this development.



Gleniffer Marine Motor Exhibited by "Ewo"

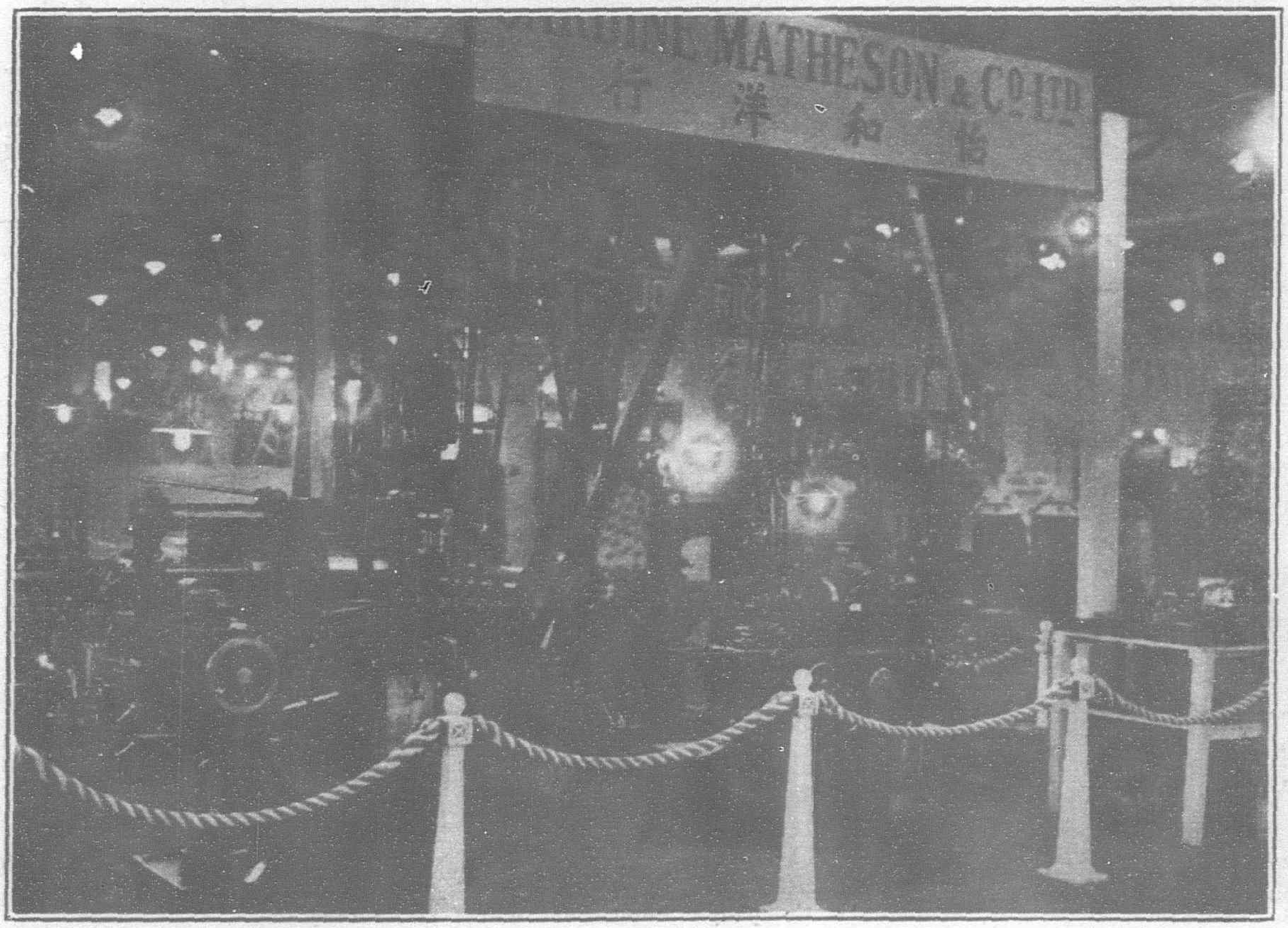
Jardine, Matheson & Company, Machine Tool Display

STAND No. 53

IN addition to the exhibit of Edgar Allen & Co. and the fine show of their marine motor department, "Ewo" had also an extensive display of machine tools. Jardine, Matheson & Company are the sole agents in China for the Associated British Machine Tool Makers, Ltd., which comprises the following firms: J. Archdale & Co., Ltd., Birmingham, W. Asquith, Ltd., Halifax, J. Butler & Co., Halifax, Churchill Machine Tool Co., Manchester, Kendall & Gent, Ltd., Manchester, J. Lang & Sons, Ltd., Johnstone, J. Parkinson & Son, Shipley, G. Richards & Co., Ltd., Broadheath, Smith & Coventry, Ltd., Manchester, H. W. Ward and Co., Ltd., Birmingham.

There are seven machines actually working at the show and they reveal the best features of British workmanship.

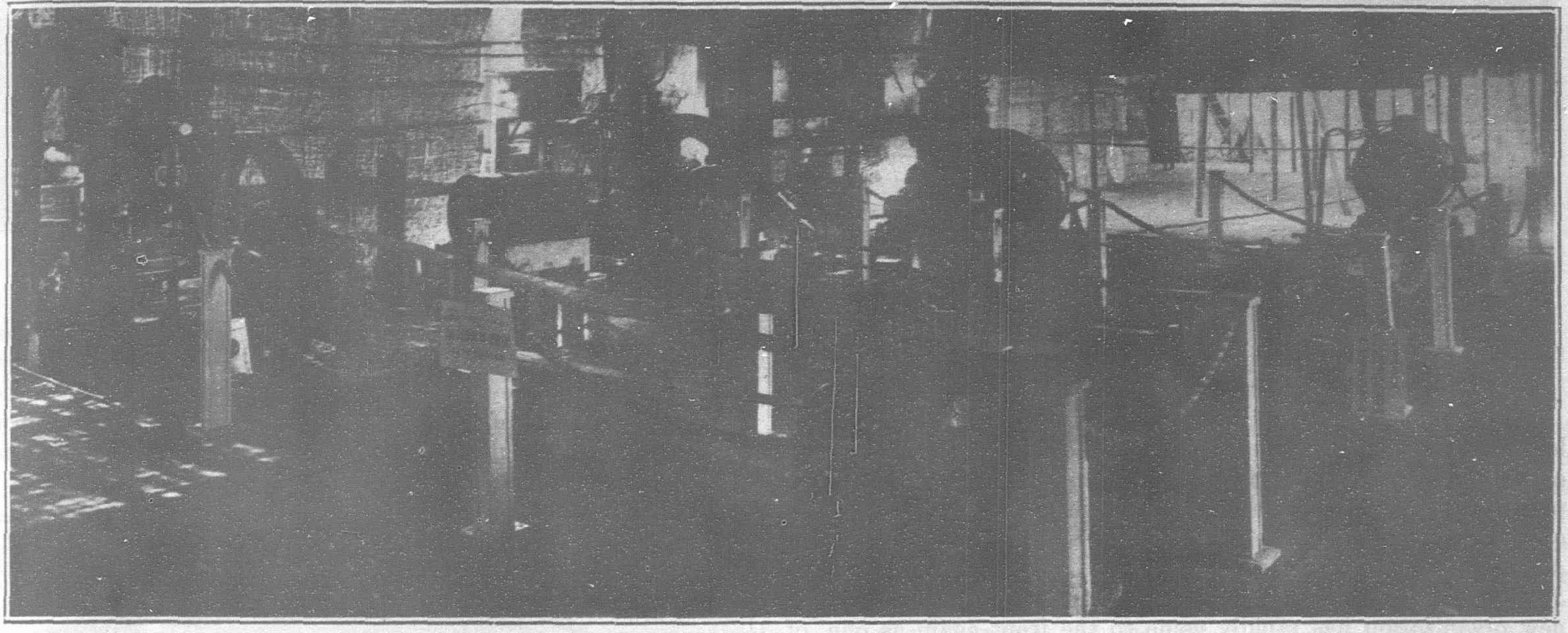
No 1. "Universal" milling machine by Messrs. J. Parkinson & Son, Shipley. This type of machine will do accurate work, gives maximum output and is very easily handled, a special patented feature being the method of driving the feed independently of the spindle by which the capacity of removing metal is greatly increased. The main drive is by four-step cone and one rate of gears, thus providing eight speeds for each speed of the counter shaft, which is of compact gear-box type with two forward and one reverse speed.



No. 2. Patent sensitive and radial drilling machine by Messrs. J. Archdale & Co., Birmingham. This machine is designed for high-speed drilling and has improved tapping motion for tapping, operated by lever on the saddle, as well as other improvements. Driving motion is by a change-speed box of the sliding wheel type giving nine spindle speeds, but it can be driven by electric motor instead of the constant speed belt. The radial arm gives a radius of 32 inches, which can be extended to 38 inches and the drilling test in M. S. 3/4-in. diameter rate of drilling is 6-in. per minute.

No. 3. Radial drilling machine by Messrs. J. Archdale & Co. This is a larger machine capable of doing larger work with a radius of 3 feet. Nine changes, and with double gearing 18 changes, of speed are provided, and in the drilling test in M. S. 1-in. diameter the rate of drilling is 6.2-in.

No. 4. 16/18-ft. stroke croak type shaping machine by Messrs. J. Butler & Co., Victoria Iron Works, Halifax. This is one of the four sizes in which these machines are manufactured.



The Electric Lighting Plant at the Auto Show

No. 5. 6-ft. by 30-in. by 30-in. high-speed planing machine by Messrs. Butler & Co. The gearing is unique in this machine. All the gears are arranged on specially prepared flanges inside the bed and no shaft bearings are cast with the bed. Once the bed is fixed on its foundation it need never be disturbed.

No. 6. 10-in. by 24-in. "Universal" grinding machine with tool and cutter equipment, by Messrs. Churchill Machine Tool Co., Manchester. In addition to the tool and cutter grinding equipment, the machine is a useful adjunct to the grinding equipment of any shop, as, if employed on plain cylindrical grinding of shafts, etc., it is just as rapid in operation as the standard "Universal" or small plain grinding machine, the table, mechanism, and speeds of these machines being identical. This latter is an important point, because when the machine is not employed for cutter or tool grinding it can always be employed for grinding shafts and similar work.

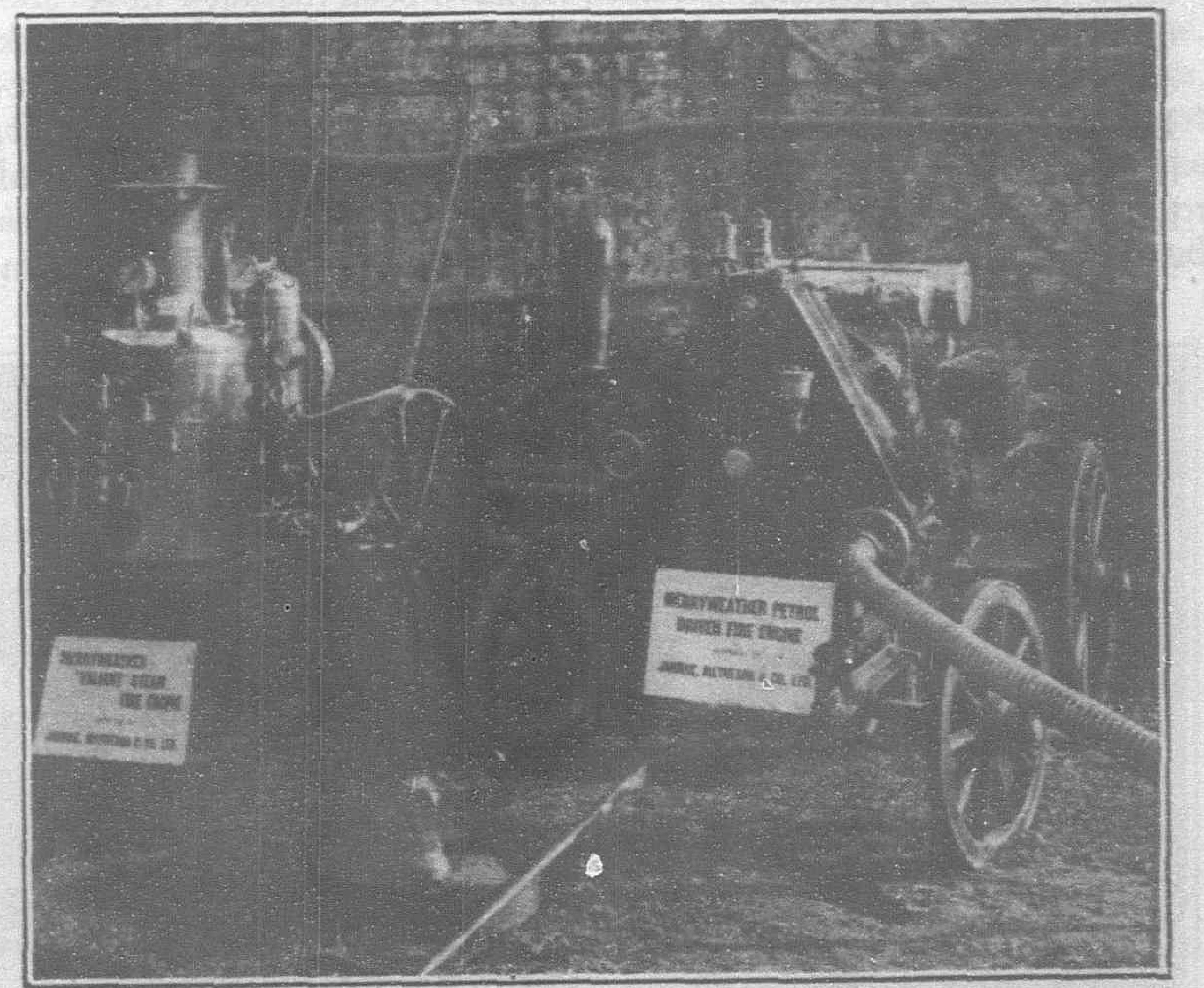
No. 7. 69X single wheel wet tool grinder by Messrs. B. R. Rowland & Co., Ltd., Reddish, near Manchester. This is manufactured in three sizes covering a long range of work, and in each case, reliability, appearance and freedom from splashing or other trouble have been studied.

Fire Protection.—Hooked up ready to protect the highly inflammable structure against fire, were a Merryweather petrol driven and a "Valiant" steam fire engine from the well-known British manufacturers, who have been represented for many years in China by Messrs. Jardine, Matheson & Co.

Electric Lighting Plant

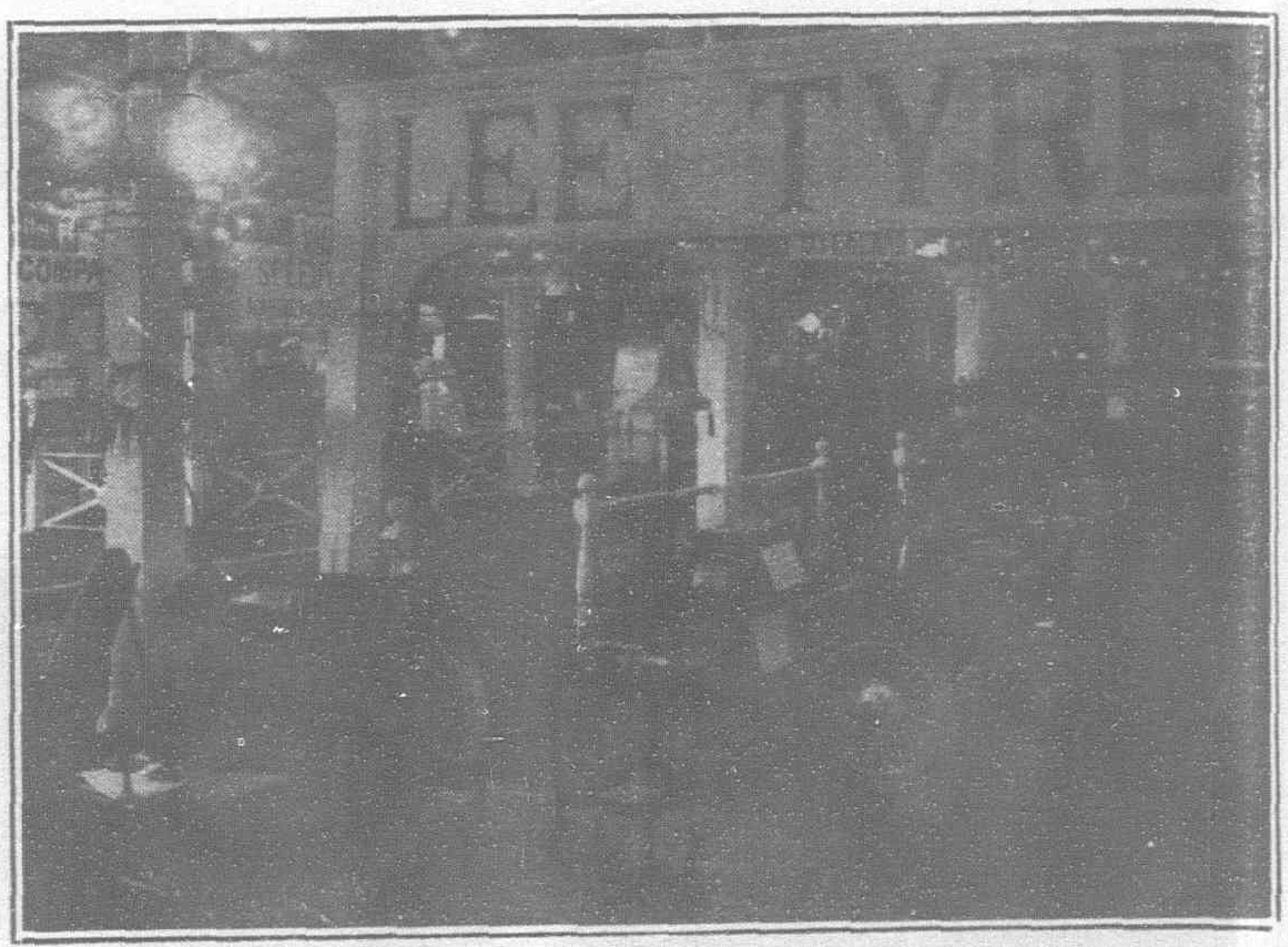
The illumination for the automobile show was supplied by the electrical department of Jardine, Matheson & Company, Ltd., from engines and plant of the different sizes carried in stock. The engines and dynamos were taken direct from the cases in which they arrived, set up on their foundations and run up to load without preliminary trial runs and continued in steady operation during the entire show without developing trouble of any kind.

The plant comprised three sets, consisting of crude oil engines of 70 h.p., 25 h.p., and 18 h.p., the generators being of 45 kw., 15 kw. and 10 kw. respectively. The engines are manufactured by Messrs. Vickers Petters of Yeovil, England, and the generators by the English Electric Co., Ltd. These engines are extremely economical in fuel consumption ranging between .45 to .55 pints of fuel oil per B.H.P. hour. The governor gear is very simple and efficient in operation and can be readily adjusted. The engines are started by means of compressed air starters, the tanks which store the air being charged direct from the engines. The fuel oil for these engines was supplied by the Asiatic Petroleum Company, Ltd.


MERRYWEATHER "VALIANT" STEAM FIRE ENGINE
MERRYWEATHER PETROL DRIVEN FIRE ENGINE

Merryweather Fire Engines Ready to Protect the Buildings against Fire

Fuel Oil Tank Supplied by Asiatic Petroleum Company for the Electric Light Plant

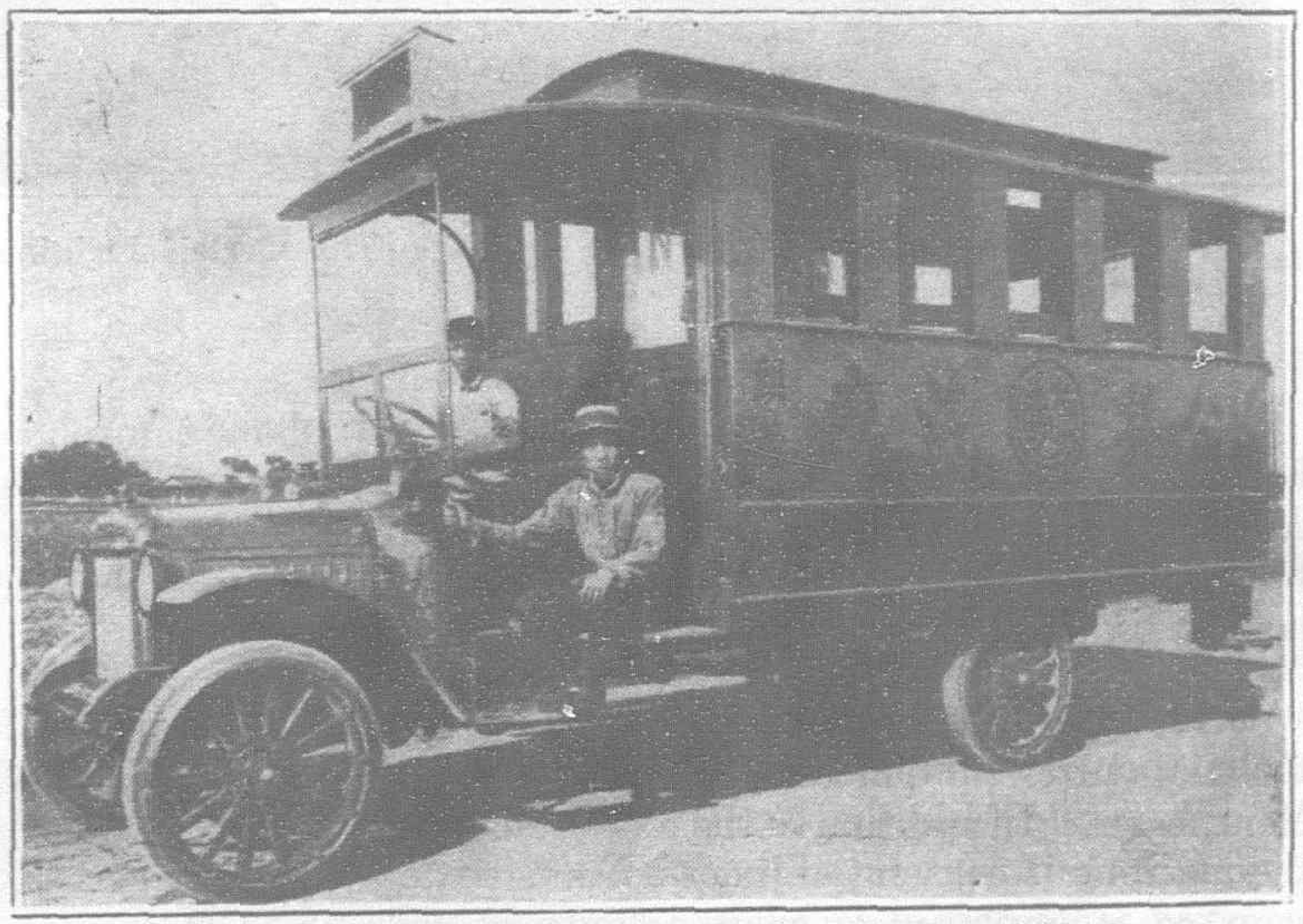


Stand of the Lee Tire and Rubber Company, exhibited by their agents, the Central Garage

John Richards & Company, Ltd.

STAND No. 51

THE old and well-known Shanghai Electric and Asbestos Company, Ltd., one of the pioneers in the Chinese electrical field, went into voluntary liquidation some time ago, but many of the foremost local British interests came together to extend support and encouragement to the two directors who had contributed so much towards the opening of this market for British materials, and out of the ashes of the old concern, arose the new hong, John Richards & Company, Ltd., with Mr. Richards as managing director and Mr. J. Frost as director. With larger capital and a wider field the new organization has rapidly come to the front again as one of the strongest electrical and engineering firms in the China field, securing contracts that leave no doubt as to its ability to win success. The electrical exhibit of this concern at the auto show covered a wide range of British and some American specialties, all brilliantly illuminated by large clusters of Philips lamps, manufactured by the Philips Glowlamp Works, Ltd. There were also shown Ferranti motors of all sizes and for all purposes, switch gear from Ferguson, Pailing & Co. of Manchester, Hart accumulators, with a Thornycroft-Vickers generating set, such as have been installed in several of the Hongkong & Shanghai Bank buildings in China, Craigpark cables and wires, national gas engines made at Ashton-under-Lyne, H. T. Boothroyd, Ltd., dynamos and motors and a lift, from the Titan Lift Company, Ltd. of London, of which several have been recently installed in Shanghai. The American agencies of this concern were represented by a line of motors and fans from the Century Electric Company of St. Louis. On the whole a most excellent and comprehensive exhibit, which, taken with the activity and record of the new concern in obtaining business is evidence that the reputation of the old phœnix bird we used to read about is being pushed hard by its modern electrical and asbestos lined prototype.



Garford Motor Bus for Nantungchow furnished by the Central Garage, Shanghai

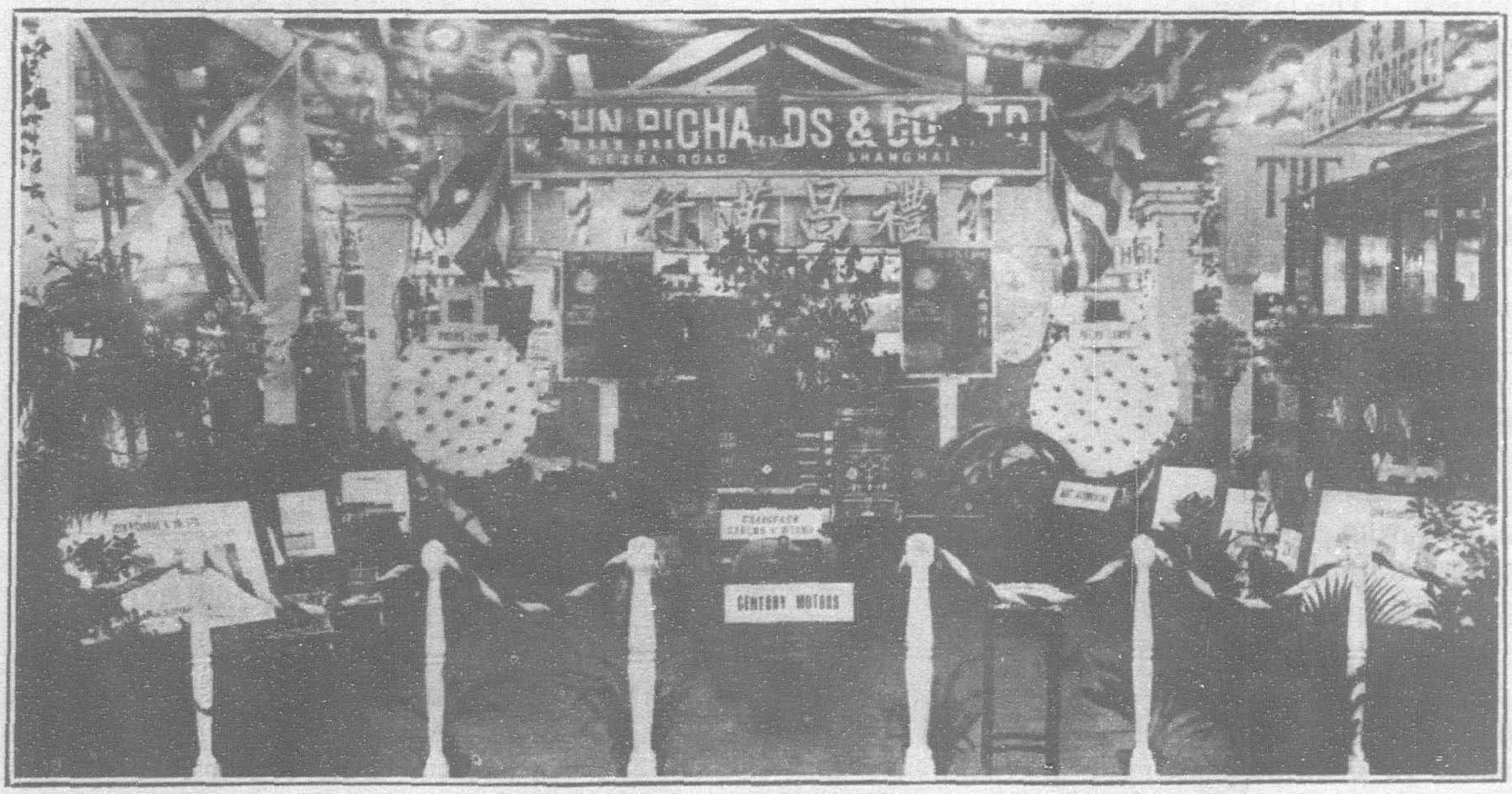
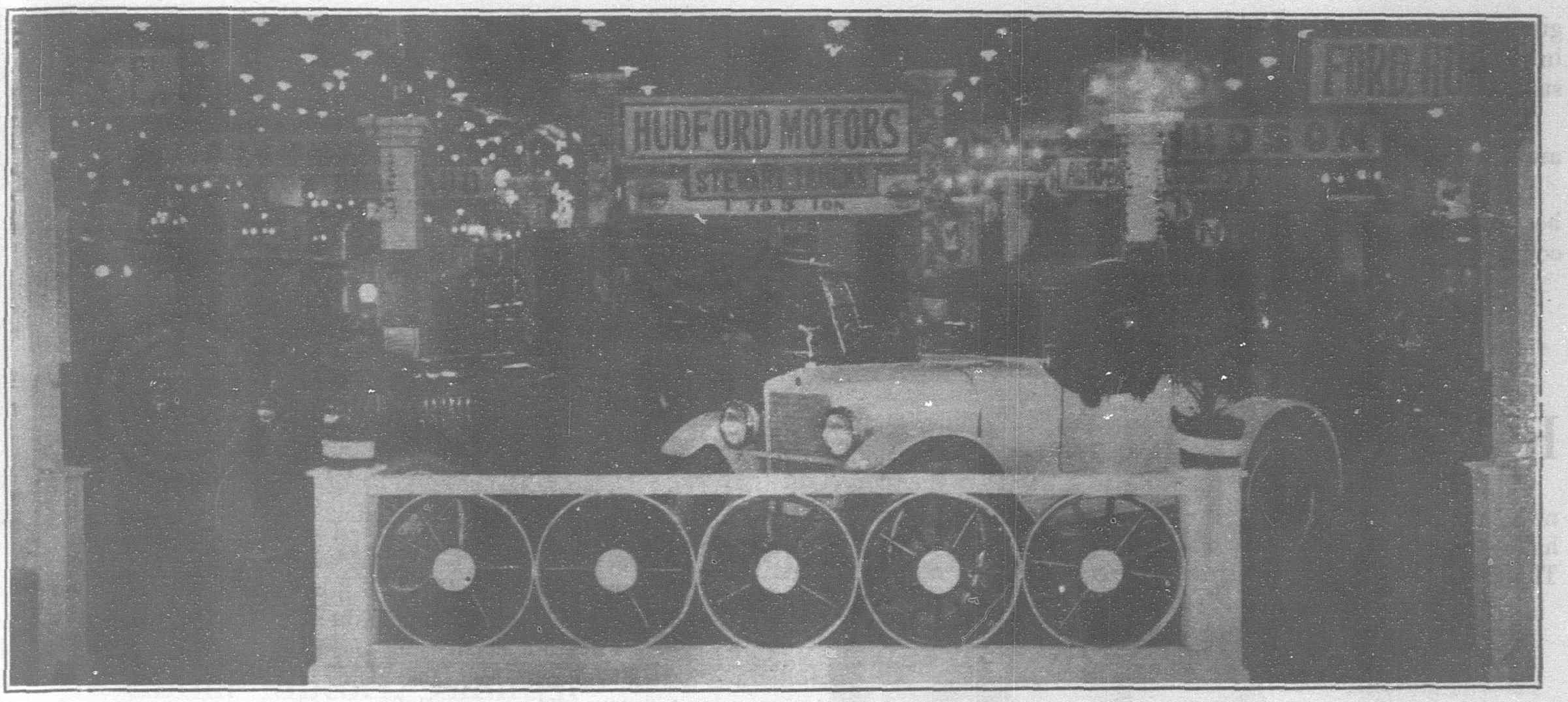


Exhibit of John Richards & Co., Ltd.



Ford, Hudson, Essex

(Dodge & Seymour (China), Limited, Exhibitors)

STAND Nos. 58-60, 65-67

FORD, Hudson and Essex cars were exhibited by the Hudford Motors, who occupied Stands 58-60, 65-67.

Dodge & Seymour made a special show of Fords in several types, from the two-seater to the limousine. A limousine chassis shipped from the Ford works and the body built by the Hudford Motors, is an exceptionally fine car, with a wheel base of 118-in. by 124-in.

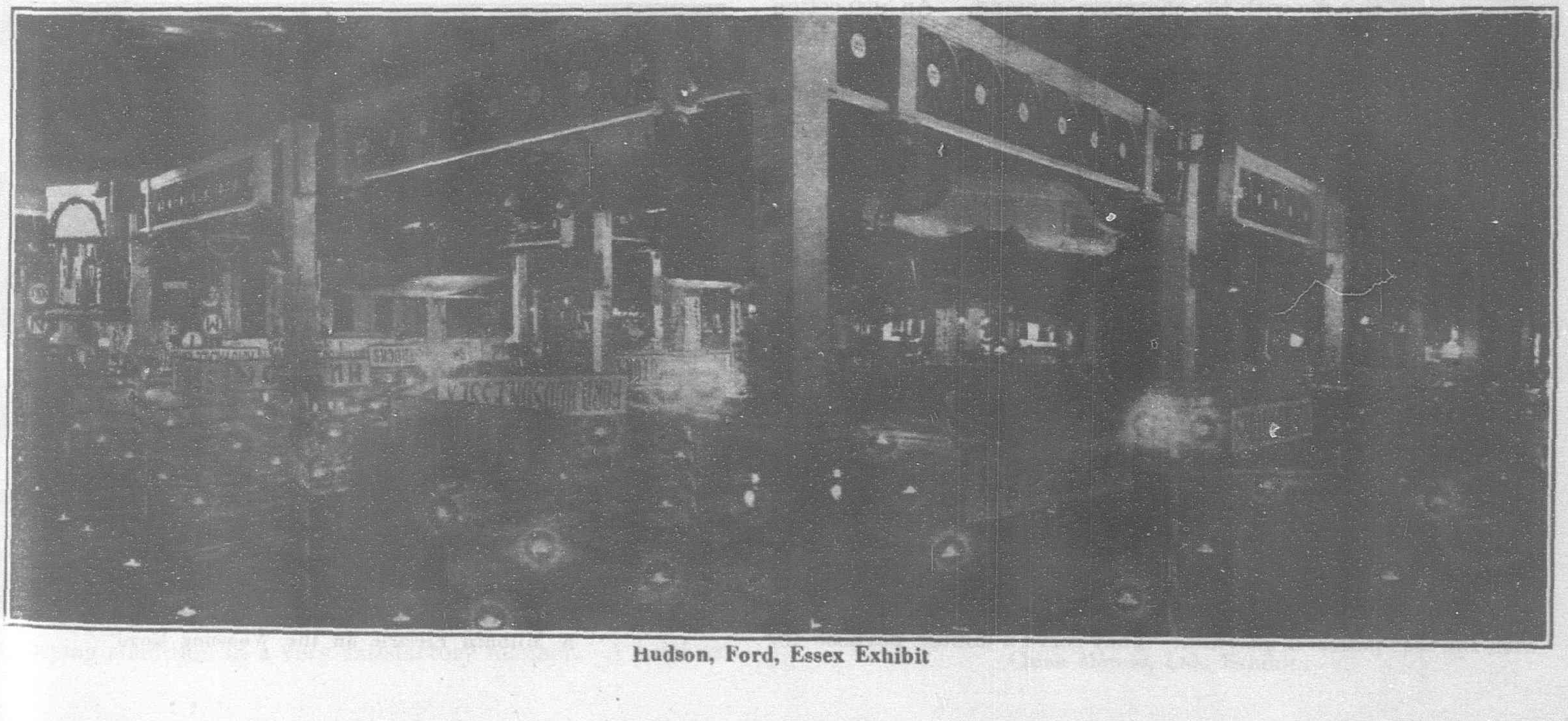
The company supply the Fords in the following types: special roadsters, limousines, landaulettes, extension roadsters and limousines, one-ton trucks, 1½ and 2-ton trucks, 2½-ton Olsen extension and Fordson tractors.

The simplicity of the Ford car, which has gained for it universal appreciation and has made it the popular car (3,500,000 people now use the Ford car), is well-known and the models exhibited by the Hudford people are worth examination.

The steel used in Ford cars is treated with vanadium and other mineral alloys, which not only cleanses the molten steel of impurities, but brings the molecules closer together, giving them greater adhesiveness and making the resulting product infinitely tougher and stronger. The steel so treated is the highest priced as well as the highest quality used in automobile construction. At the expense of several hundred thousands of dollars and a great deal of valuable time Mr. Ford worked up the formulas by which the steel is produced and heat-treated.

Hudson and Essex.—The Hudson and Essex cars were a big part of the Hudford motors show stocked in the following types: Roadsters, limousines, broughams and touring cars, the first three having special bodies.

The Hudson limousine in beauty and finish is comparable to the most costly cars on the market. Yet, mounted upon a chassis which is built in large quantities, it can be produced at a surprisingly moderate cost as compared with many cars of its type. The bodies are built with painstaking care, and in limited numbers. No detail of equipment is lacking—vanity case, smoking set, foot rest, pillows, clock, even to the silver and ivory mounting of the door latches. The excess power of the Hudson super-six motor adapts itself admirably to the larger limousine type of body, and



Hudson, Ford, Essex Exhibit

gives, without added weight, the quick acceleration so desirable in heavy and congested city traffic, together with the smooth steady power so pleasing on the open boulevard.

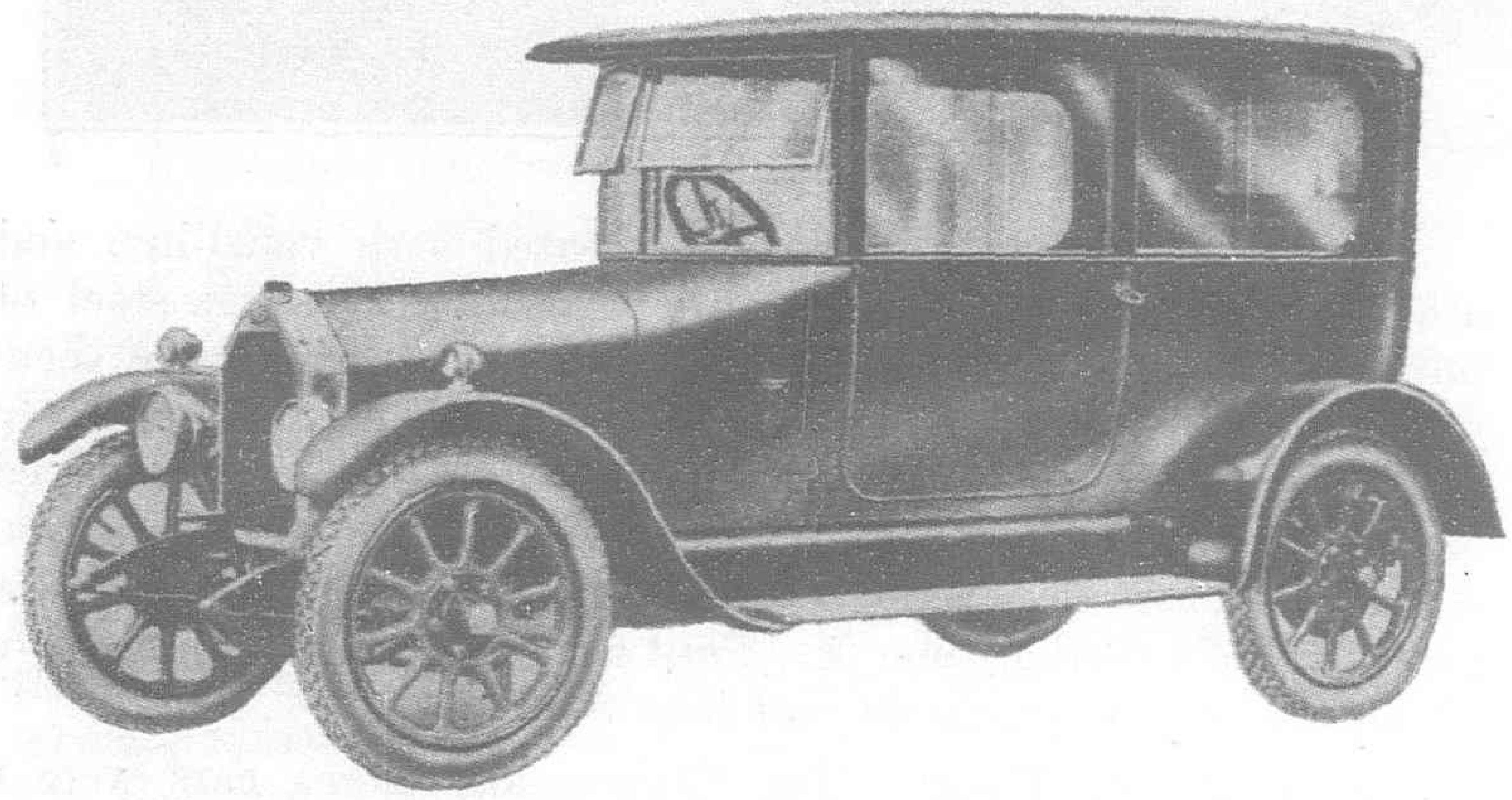
The touring offers style, comfort, beauty of line and finish and above all, performance.

In the Essex cars the five-passenger touring car is a model, beautiful in line and finish. The seats are wide and roomy. Sturdy construction assures great riding comfort and small depreciation.

* * *

The Humber Car

REPRESENTED in China by Messrs. Scott, Harding & Company of Shanghai, this well-known British car was not exhibited at the automobile show, owing to a delay in the arrival of new cars. These handsome cars are, however, a feature of Shanghai's roads and are owned by many of the most prominent taipans. The new 1922 Humber's attracted great attention at the recent Olympia show at London where the following models at reduced prices were shown:—



11.4-h.p. 2-seater (with double dickey seat), £595: 11.4-h.p. 4-seater touring car, £620: 11.4-h.p. coupé (with double dickey seat), £725: 15.9-h.p. 5-seater touring car, £850: 15.9-h.p. saloon de luxe, £1,200.

The lively interest created by the Humber exhibit at Olympia last year and the enthusiastic expressions by the best judges on that occasion have been fully justified by the firm's experience during 1921. The 11.4 h.p. and the 15.9 h.p. models have more than maintained the high reputation of Humber productions. Indeed, Messrs. Humber, Limited, have been hard at it throughout the entire season to cope with the enormous demand. An inspection of the 1922 models will first of all reveal, side-by-side with price reductions, the introduction of several features of exceptional interest in bodywork and some notable refinements in chassis details. A new all-weather hood, standardised on the 2-seater, 4-seater, and 5-seater open cars, will prove a great boon to every class of motorist.

The All-Weather Feature.—By means of this exclusive feature the open models can be easily and quickly converted into all-weather vehicles. When the hood is erected complete with the side panels, etc., it is taut and tidy looking, and there is nothing to detract from the general harmony of outline. The side panels are fitted with non-inflammable celluloid lights supported by aluminium frames concealed by the fabric covering. The light in the rear of the hood is also made from this special non-inflammable celluloid. When the panels are fitted into position they lie snugly against the inner fabric fillet, thereby effecting an absolutely weather-proof joint. They are rigid in use, and those fitted to the doors are provided with a flat metal arm, which slides into a socket in the door, the front panels being additionally secured to the wind-screen upright. All doors open easily and to their full extent, with the side panels in position. They serve a double purpose for their stiff construction renders them ideal for use as side screens when the hood is down.

The 11.4-h.p. Models.—The three 11.4-h.p. cars exhibited were delightfully designed and all that can be desired in their particular class. The ease with which they are handled, the obvious strength and perfect springing of the chassis, power on hills, easy gear change and quiet running, make the Humber 11.4-h.p.'s most remarkable models in every sense of the word.

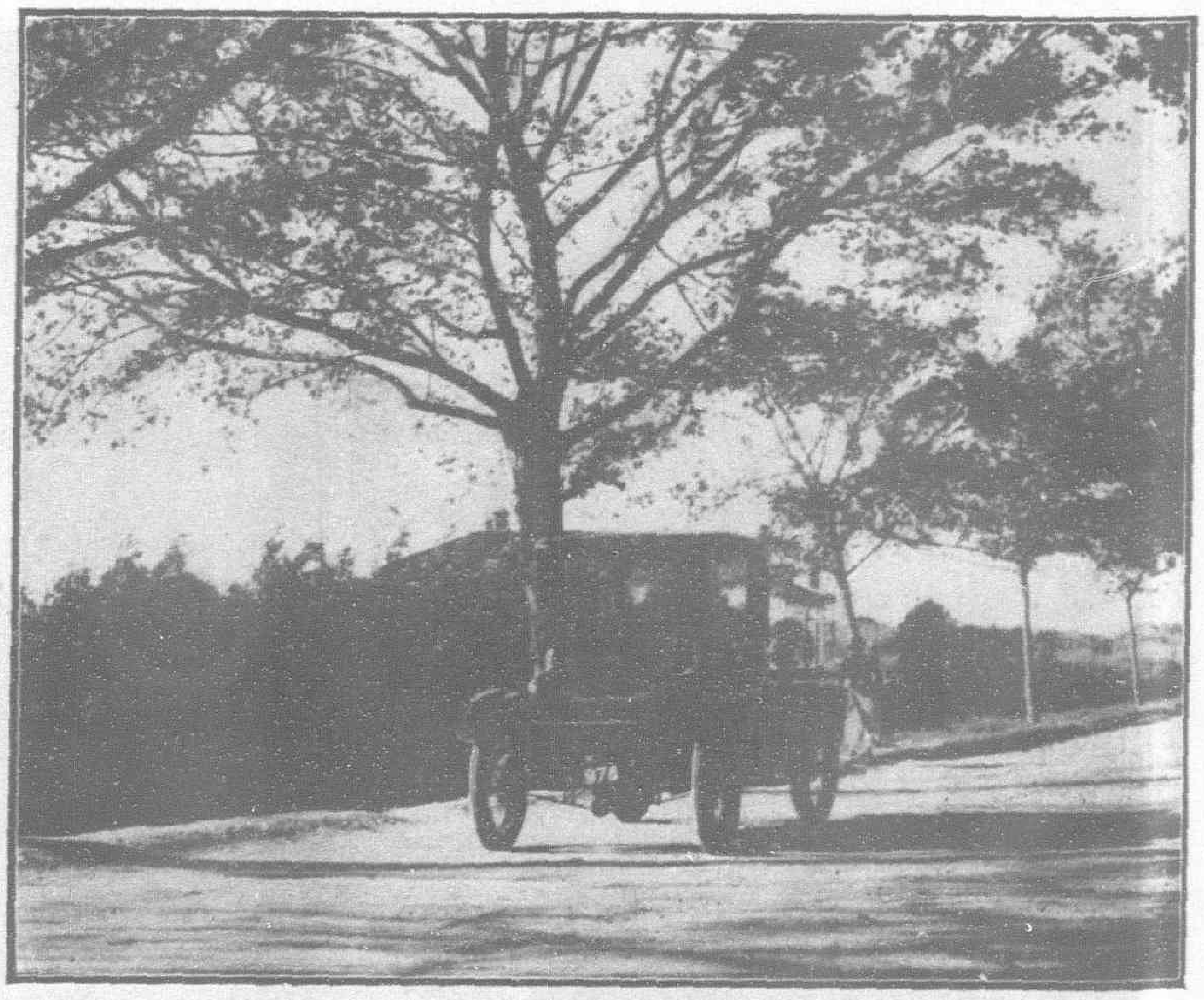
The 2-seater open model and coupé possess well upholstered double dickey seats with folding arm-rests, all enclosed in their spacious boots. The cars are richly upholstered with real horse hair stuffing and coppered springs. The covering for the 2 and 4-seater open models being first selection hand buffed leather, and for the enclosed models, rich Bedford cord.

The 11.4-h.p. Saloon.—The 11.4-h.p. saloon, priced at £750, is a remarkable value and its graceful lines, beauty of finish and luxury of equipment fully reflect the Humber tradition.

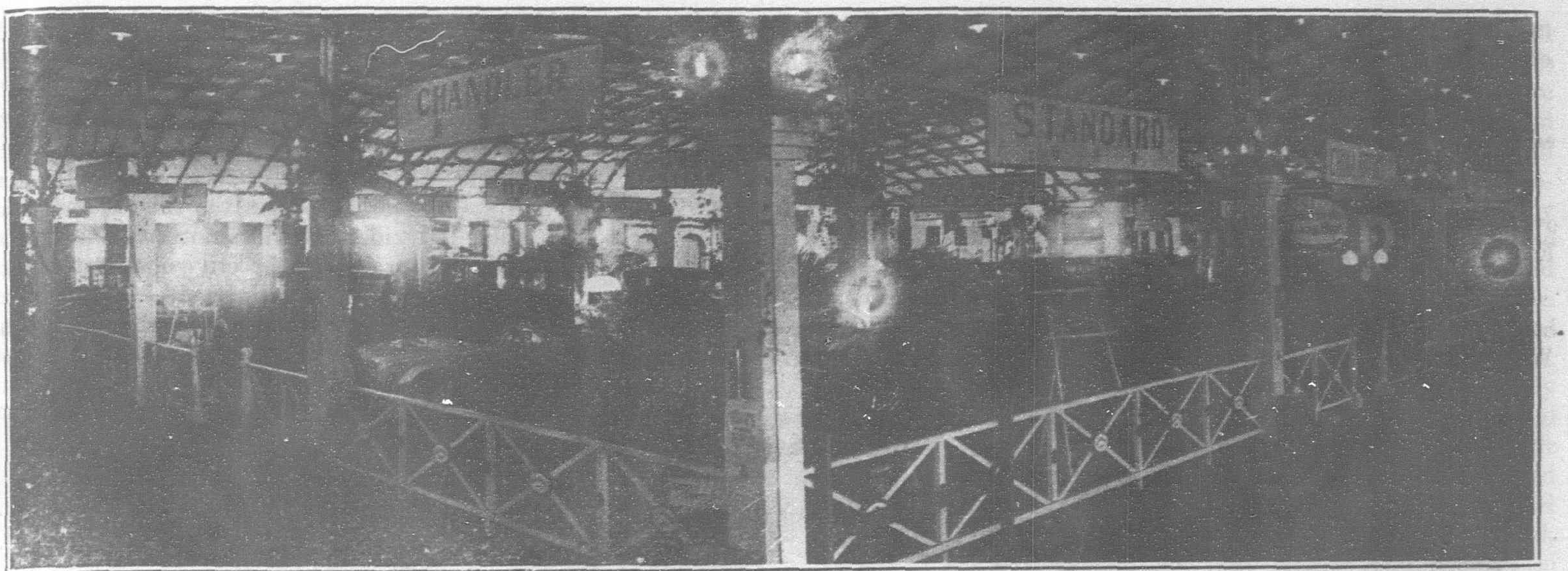
15.9-h.p. Models.—The 15.9-h.p. five-seated tourer and the saloon de luxe are the accumulated experience of nearly a quarter of a century of car construction, and the net result is a car of faultless design, exquisite balance, solid yet flexible construction, and refined finish. The over-all lines and general appearance of the open five-seater are as elegant as those of any car of its class on the road; its silence is one of its great assets, simplicity of control is a very strong feature, and for these and other equally sound reasons this model has been repeatedly described as the ideal car for the owner-driver.

The Saloon de Luxe.—This is the Humber model superb, illustrating as it does car refinement and comfort in the highest degree. It is luxuriously appointed and accommodates four passengers with every traveling facility; upholstered throughout in rich Bedford cord, and beautifully sprung. The driver's seat is of the bucket-type, detachable, and is adjustable fore and aft. The front passenger seat is of a specially designed detachable and collapsible type, folding up neatly to the side of the body, allowing free access to the driver's seat. The rear seat is exceptionally cosy, and accommodates two passengers with room to spare.

All that can be done by years of scientific study, aided by skilled craftsmanship and the use of the best materials, has been done to make the Humber cars of 1922 the most perfect examples of modern car construction. Alike in appearance, economy of fuel, and low cost of upkeep these models may be relied upon to further enhance the Humber reputation.



A Milburn Electric on the Woosung Road



China Motors, Ltd., Exhibit

China Motors, Limited

STAND Nos. 68-76

THIS concern had a most diversified and exceptionally well displayed exhibit of the many well-known machines they are agents for in China. Over a dozen manufacturers of standard automobiles have entrusted their interests to the China Motors, Ltd., foremost amongst which are the Hupmobile, Dodge, Chandler, Premier, Cleveland and Leyland, American, and the Standard, Lancaster, Crossley and Clyesdale of England, the A.B.C. and Indian motor cycles. This company has come to the front as one of the most successful in the Far East. It operates two of the largest garages in Shanghai, the Central and Eastern, and recently purchased a site on the Bubbling Well Road with a 450-foot frontage upon which will be erected the largest garage in Asia.

The new building will house all of the Company's manufacturing activities and the ten odd different makes of cars for which it is agents with a complete shop for motor and aeroplane engine repairs. The coach building floor will be one of the largest and most up-to-date in the world. Branches in North China have been opened, with a fine establishment in Peking as the Company's main subsidiary. The Star Garage of this concern is four storeys in height with a floor space of 55,000 feet and a depth of 290 feet and a frontage on Bubbling Well Road of 75 feet.

In addition to the show rooms the first floor is occupied by the body construction department which turns out coachwork equal to western plants. The forge rooms, battery charging plant and the lathe rooms are also well equipped.

Machinery for the making of spare parts have been installed in these shops. Painting and varnishing is done on the second floor and have dust proof heated rooms connected with the body building department by two large elevators.

The tire repair department with a modern steam vulcanizing plant is on the third floor.

The features of the various machines exhibited by the China Motors, Ltd., are given by them as follows:

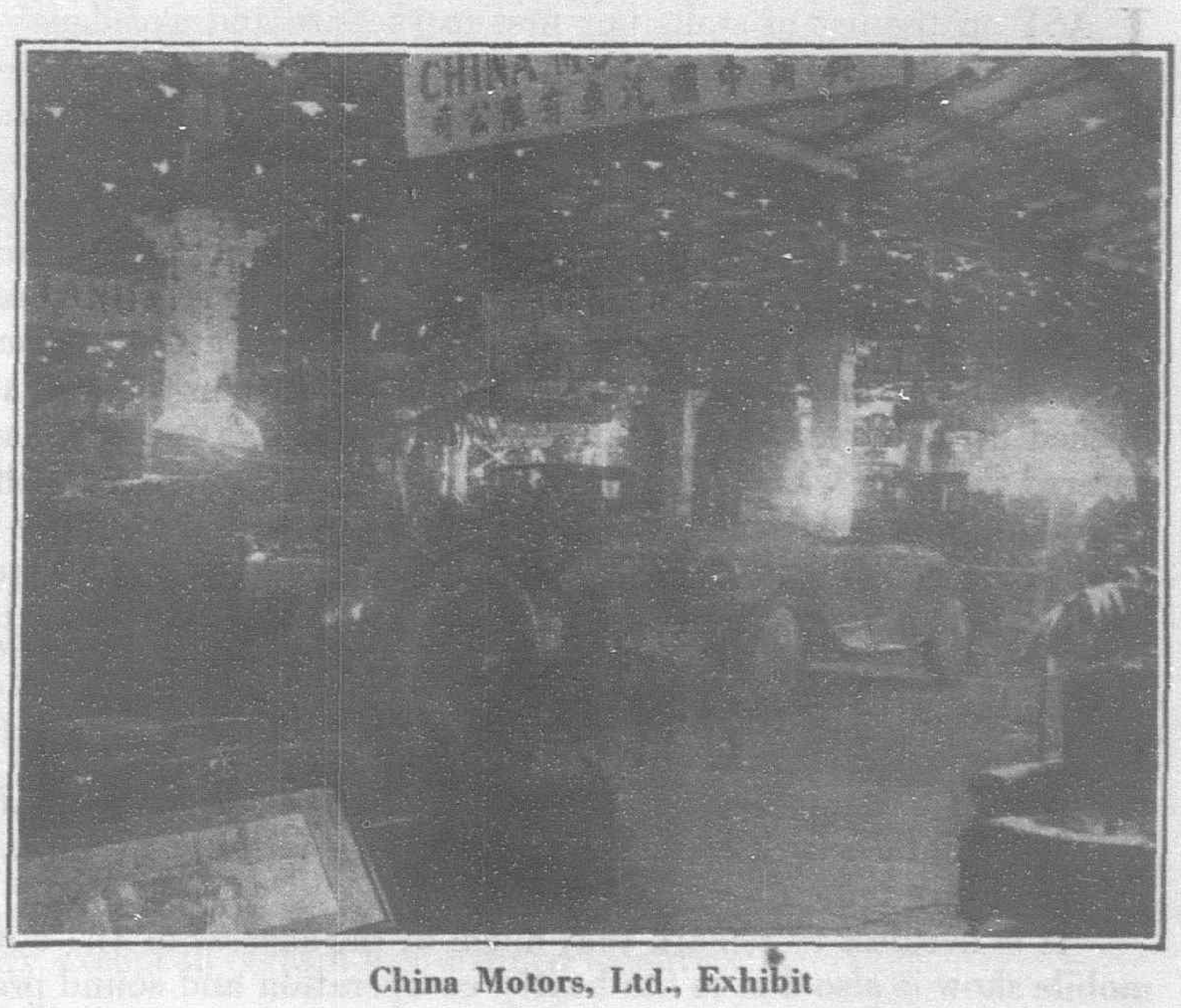
Hupmobile.—This is the most efficient four cylinder car produced by America giving a splendid performance for such an economical engine being capable of 60 m.p.h. The general design of the Hupmobile embodies the essentials of permanent style and beauty. The same scrupulous care and skilful workmanship that has earned such a remarkable reputation for the Hupmobile engine, provide a body roomy and comfortable, with equipment and appointments of the same high quality as the car itself.

Dodge.—The Dodge is only produced in one model and has been tried out over the world for years past and has stood up to the most trying condition in a very satisfactory manner. A brief examination of the chassis reveals several instances showing how the comfort of the driver and the ease with which the latter can affect adjustments have been considered. A minor point, but none the less important, is the location of the pedals for the clutch, accelerator and brake. Michelin disc wheels are used as standard equipment. Competent performance, unusual petrol and tire mileage and marked freedom from repair are a characteristic of this car.

Cleveland.—This car is produced at the Chandler factory and embodies all the fine qualities of that wonderful car on a lighter and smaller scale. In its lines of design, in the nicety of all its fittings and furnishings, and in the beauty of its finish, it reflects the ideals which created it, and which are built into it.

Chandler.—The Chandler six motor is a very marvelous engine and the general construction of this car puts it in a class entirely in its own and is doubtless the best car produced, at its price, in America. Special features that have made the Chandler motor famous include the solid one-piece aluminium motor base, extending solidly from frame to frame; the silent chain drive for the auxiliary motor shafts, three chains running in a constant spray of oil, and the Bosch high-tension magneto for positive ignition.

Standard.—The economy with which this small car can be run makes it very attractive to the man that requires utility with economy. The patented top and side curtains convert the car from a touring car to an all weather car in a few moments, and the adoption of an overhead valve engine, flexible joints in the trans-



China Motors, Ltd., Exhibit

mission, and additional oil spaces for the rear axle all tend to the efficiency of this car.

Crossley.—This car is so well known from its services rendered to the R.F.C. during the recent war that comment is superfluous.

Leyland Truck.—This chassis is too well known the world over to require any description. Its the acme of first quality English production.

Indian Motor Cycle.—These motor cycles have become a byeword in the world of sporting and hard riding motor cyclists. With frame specially designed and built to withstand the shocks and jars inseparable from travel over all kinds of roads, with steels of the highest quality entering into its construction, long life and faithful operation are assured. The maximum of economy is obtained by this engine, between 40 to 46 miles on a gallon of petrol and from 80 to 100 miles on a quart of lubricating oil is not unusual.

A.B.C. Motor Cycle.—This motor cycle is an entirely new departure. The four speed gear box gives the rider a feeling of security quite impossible to a rider of earlier motor cycles and the efficiency of the A.B.C. is maintained irrespective of climate conditions. An aircraft motor in miniature with its steel cylinders and symmetrical head design, the engine will never over heat. It can be run indefinitely on the low gears without suffering the least harm.

The H. S. Honigsberg & Co., Inc., Exhibit

H. S. Honigsberg & Company

STAND Nos. 54-64

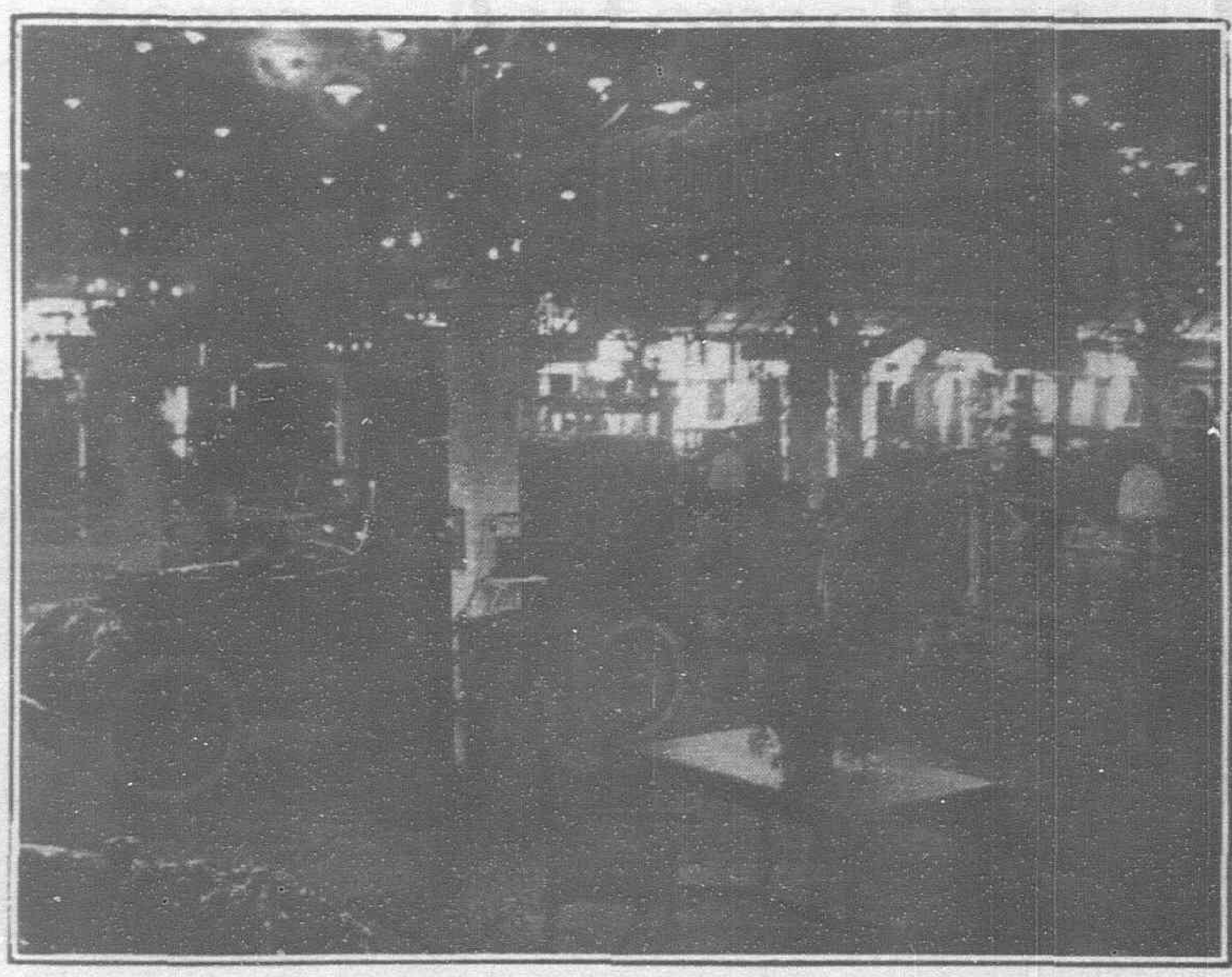
LAST on the list of stalls but first in the size and excellence of exhibit is H. S. Honigsberg & Company, Inc., the pioneer American motor agency in China. American automotive manufacturers are indebted to the head of this enterprising concern for many of the advantages they now enjoy in this market, the result of the untiring activity on the part of the young Californian who had the vision to foresee and the sticktoitiveness to win success. From a local market limited to the sale of a few pleasure cars, the field had broadened year by year as new roads have opened up new territory. Many new concerns and agencies have entered the field, with American, British, French, German and other manufacturers keenly competing for the business, but it is fair to say that they all concede a generous word of praise to the enterprising young American who contributed so largely to paving the way for the creation of the present-day market in China. The early missionary work of this concern has been cumulative. All have benefited. Its business has kept pace with the expansion of the market, being incorporated and strengthened with a large working capital which enables it to swing successfully its increasing volume of orders.

It is needless to remark that much of the success of the automobile show is also due to the hearty co-operation and sound practical ideas of Mr. Honigsberg, who early saw the importance of such an exhibition as a means of promoting greater interest in mechanical transportation throughout China, and gave his time to its organization as head of the house committee which had charge of the exhibits. The Honigsberg stands in the show were the first to have their signs out. It is difficult in such a short article to review the many activities of this firm or adequately describe their exhibits. Suffice to say that prominence was given to their three leaders, the Buick, Chevrolet and Cadillac motors, which were displayed in various types. The features of these machines as given out by Messrs. Honigsberg & Company are as follows:

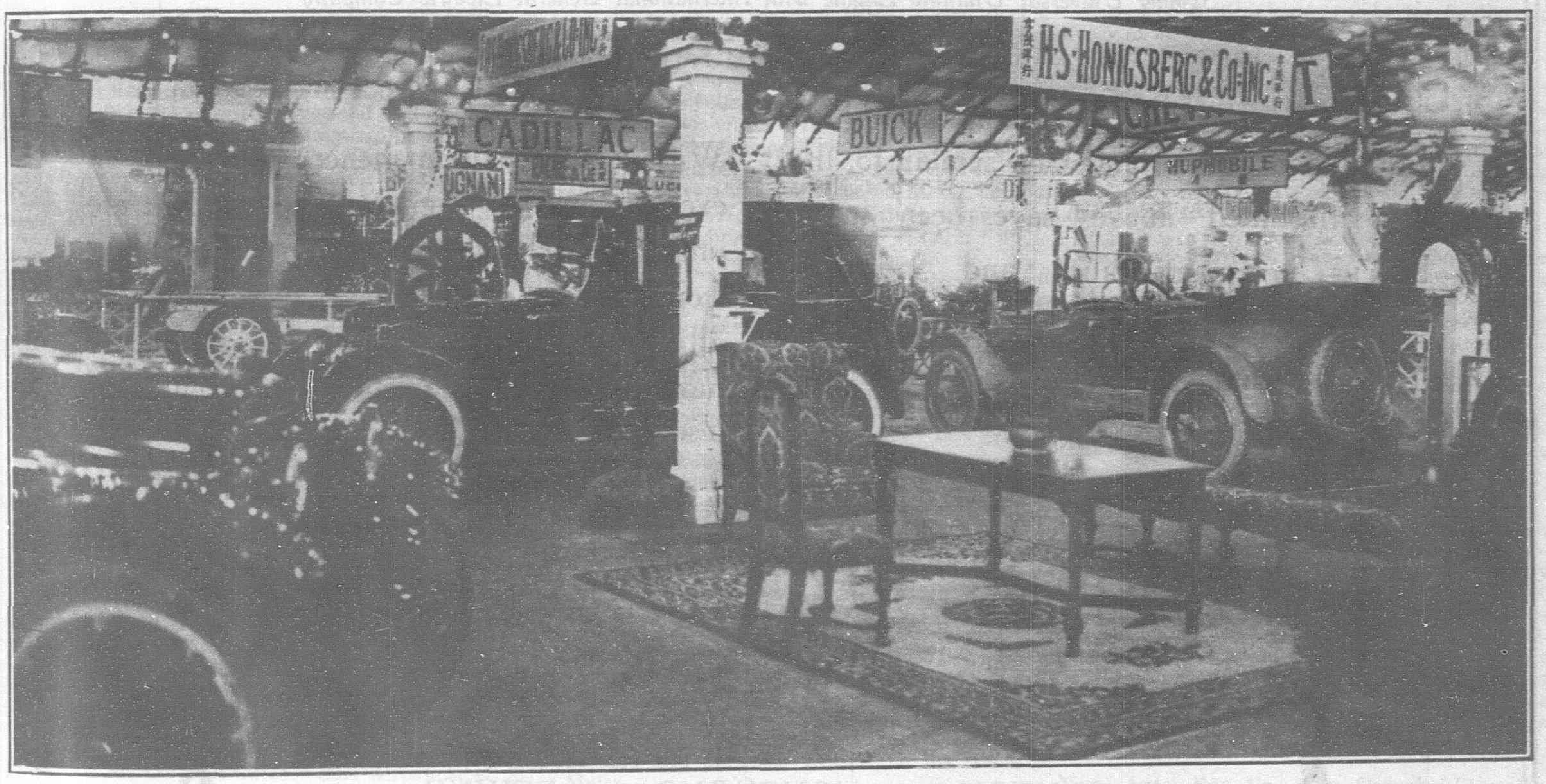
Buick Four.—The 20 h.p. model, which closely resembles the famous six-cylinder car, follow generally a design which may possibly be described from the British point of view, as more orthodox than most American designs. The engine is in appearance similar to the six cylinder Buick: manifolds and carburetor are mounted on the left side and a new type of heat control for the carburetor is used. This heat control consists of two pipes extending from the exhaust pipe in front to a heating chamber around the base of the intake manifolds. A valve is placed in the exhaust pipe at the left of the upper tube. This valve is operated automatically from the throttle valve so that at low speeds all the exhaust gases are passed around the intake manifold and at high speeds practically none of the exhaust gases pass around the manifold. This new device appears to be a great improvement, and no doubt it is in some measure responsible for the excellent performance being secured from this engine, on test and experimental cars.

Cadillac.—The chassis of the 32 h.p. car is interesting because the Cadillac claims to be the original eight-cylinder car (at all events so far as America is concerned) there being several features embodied in the design which render it particularly attractive thermostatically controlled radiator, to mention but one. The body has the appearance of permanence of style, which would protect the owner's ability to use his car with propriety just so long as the chassis renders him efficient service. Qualities of safety, long life, comfort and roadability are combined with a body whose horizontal lines and exterior curves are significant of its ability to travel fast.

Chevrolet.—It is sometimes hard to describe a famous car as it is a famous man. There are so many good points, that it is usually difficult to decide where to start to describe all the good points they possess. At all events the Chevrolet valve-in-head engine does not waste any petrol, and the valves are fitted and operated by push rods, and the cylinder head is detachable. A somewhat unusual arrangement is adopted for the brake, the clutch pedal, when fully depressed, acting on the external brake of the rear wheels, while the internal brake is operated by the orthodox pedal worked by the right foot. This pedal, however, has a tilting head, so that the brake may be locked hard on when required. A tie rod beneath the rear axle would appear to render the easy jacking up of the car a matter of little difficulty.



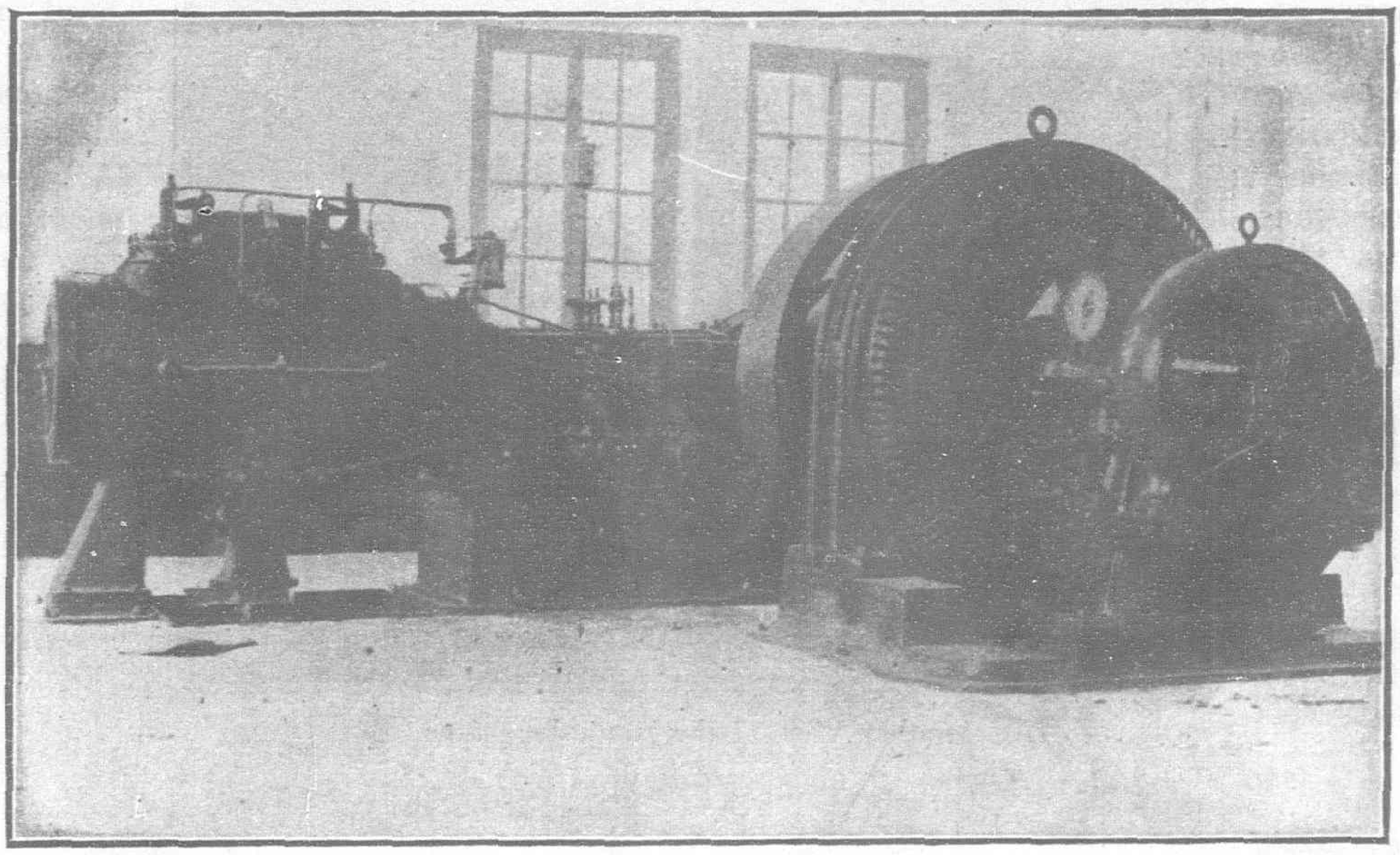
Another View of the Honigsberg Stand



Two Views of the Honigsberg Exhibit

NORTHWEST MOTOR COMPANY

The Northwest Motor Company of Suiyuan has built a road from Suiyuan to Paotowchen on the Yellow River, a distance of 96 miles. The road itself, across a level stretch of country, required little more than ditching and placing culverts, and cost less than $20,000. The company operates four Denby trucks and eighteen cars with local-made bodies on Dodge chassis, seating nine persons. The average running time under favorable conditions is six hours. This company is just keeping ahead of the railway and may be expected to strike out further towards Ninghsia as the rail head arrives at the Yellow River. The company has been eminently successful under the direction of Mr. Ni, who also heads the Suiyuan chamber of commerce. It was capitalized at $200,000 and a large portion of the shares subscribed to by the tuchun, General Tsai Cheng-hsuan, later minister of war at Peking. Road building in this section of China is the cheapest part of the expense attached to the extension of motor traffic, new construction costing about the same as upkeep. In fact, roads are as such, are hardly necessary except in certain well-defined localities.



Skinner Universal Unaflow Engine with International General Electric Company Generator and Direct-Connected Exciter

Installations of a character similar to the one illustrated above have been made by us in many cities and industrial establishments in China for the purpose of furnishing electric light and power.

With a staff of experienced specialists in every branch of engineering effort, we are prepared to handle any engineering project from the point of preliminary survey, through all the detail of design and estimate, up to turning over to the client the completed installation ready for operation.

ANDERSEN, MEYER & CO., LTD.

SHANGHAI

CANTON HONGKONG PEKING
FOOCHOW KALGAN TIENTSIN
HANKOW MUKDEN TSINAN

Harbin and Vladivostok Representatives: AMERICAN COMMERCIAL & INDUSTRIAL CO., LTD.

Far Eastern Automotive Bulletin

NEW ROADS, etc.

AVIATION

Chinese Hydroplane Tests.—Further successful experimental test flights have been made on the Min River, with Chinese constructed hydro-aeroplanes. The machines were operated by Mr. Hockey—a British pilot. Recent flights appear to be of considerable duration, and it is understood that very good altitudes have been obtained. According to the pilot, the hydro-aeroplanes are well constructed, reliable and economical.

Why Chang Tso-lin Needs Aeroplanes.—Chang Tso-lin had twenty Peking government's airplanes up until a short time ago but they have all been smashed and the pilots killed in accidents. It is barely possible that the Peking government would give him some of the new planes if an aviation pilot or instructor could be found who would be willing to go to Mukden. But as the available airmen are necessarily young and still love life they prefer to remain at Nanyuan where, at least, they have the satisfaction of knowing that their planes are looked after by competent mechaniciens before flights.—*P.D.N.*

Chihli Air Service.—Following the lead of General Chang Tso-lin, who recently suggested and carried through the formation of a Fengtien branch of the Chinese air force, General Tsao Kun asks the central government to create another branch for Chihli, Shantung and Honan. As chief of this branch Colonel Chin Kou-yuan has been nominated.

No Air Funds, P. I.—There is no appropriation made for the air service of the militia in the 1922 budget, according to information obtained at the Ayuntamiento.

Australia Air Services.—The federal government has decided to utilize the country's aircraft for long distance postal service and a limited passenger service. The routes include Adelaide to Sydney, 750 miles, and Sydney to Brisbane, 575 miles. The subsidy now arranged is L175,000 for the first year and L115,000 for the second year.

Hydroplanes for Canton.—Peking has received news that an engineering yard at Nantao is making hydroplanes for the Canton government. Orders have been given to the local authorities to investigate and report. The Chinese press finishes up the report by saying that the machine come from abroad and four are now being fitted up.

Two New Air Lines in China.—The aeronautical department, Peking, is planning an air line from Cheng-chow, Honan, to Shensi, and at request of General Tsao-Kun is also considering the Peking-Hankow line. However, in view of the emptiness of the treasury, these schemes may not materialize.

Aerial School in Dairen.—Mr. S. Kagawa, adviser to the aeronautic school at Mizuta, is on his way to Dairen with a view to establishing an aerial school in Manchuria. He stated at an interview prior to his departure that if he succeeds in getting a suitable tract of land in Dairen, he will remove the aerial school at Ojima in Gumma prefecture.

Air Department at Mukden.—General Pan Chu-ying, chief of the air department, is in Mukden to interview General Chang Tso-lin regarding the branch of the air department which has been inaugurated by General Chang at Mukden.

Aeroplane Transportation Company.—The Chinese consul-ganeral at San Francisco has received a petition from over twenty Chinese merchants at that place asking permission for organizing an aerial company in Chekiang, with a capital of $500,000. The consul-general has taken the matter up with the ministry of agriculture and commerce and aeronautical department, Peking.

Peking-Shensi Air Line.—While the construction of Peking-Lanchow aerial line is proceeding under the direction of the aeronautical department, the government (at the request of the Tuchun of Shensi) is preparing another air line from Peking to Shensi. An attempt is being made to raise a fund for the enterprise.

Chang Commandeers Planes.—Marshal Chang Tso-lin recently demanded that ten of the new planes received by Peking be sent to him at Mukden. In support of his demand Chang stated that he understood that a shipment of over one hundred aeroplanes had just been delivered at Peking by Messrs. Vickers and therefore the allotments to Mukden of a moderate 10 per cent. was very reasonable. The provision set forth in the Vickers loan agreement that the aeroplanes should be used only for commercial purposes was a reminder to Peking that should the aeroplanes be disposed of for military purposes in such a way the British minister would lodge a protest. Chang Tso-lin insisted that the aeronautical department in Mukden, which had been established with the permission of the Peking government, was just as important as that at Peking, and was entitled to a portion of the new aeroplanes. The despatch of aeroplanes to Mukden, he added, could not be regarded as a precedent, because there were no authorized aeronautical departments in other provinces.

The result is that several aeroplanes will be sent to Mukden under the pretext that they are temporarily loaned to the Mukden aeronautical department.

AUTOMOTIVE, ROADS, ETC.

New Maloo, Canton,—The construction of the southern extension of the Yuek Shau Maloo has been completed.

The extension is 6,000 feet in length, connecting the Ta Sha Tau station of the Canton-Kowloon Railway and the northern section of the Yuek Shau Maloo.

To Build Autos?—There is a proposal that the many shipyards in Osaka which cannot find employment now should take up the manufacture of motor-cars. Assuming that the technical difficulties can be overcome, there is an important point still to consider—the increased duty on steel and things made of steel. The shipbuilding yards supported this imposition on the strength of a promise to exempt shipbuilding steel.

Ningpo-Szechee-Chinghai Auto-Bus.—The Ningpo-Szechee-Chinghai Automobile Transportation Co., with mutual communications societies, has made considerable headway and at a meeting of promoters recently held at Shanghai it was decided that surveying should start on December 6, 1921, and that notifications to that effect be issued at the places concerned.

Chekiang-Kiangsu Roads.—In an endeavor to complete the main highway from Shanghai to Hangchow and from Shanghai to Nanking, the national road construction association is steadily going on with its works under the chairmanship of Dr. C. T. Wang. In an interview with the tuchun of Chekiang, Dr. Wang promised that the Chekiang military surveying department would take care of the survey of the highway from Shanghai to Hangchow. It is understood that Dr. Wang has made a similar petition to the military governor of Kiangsu, asking him to follow the example of Chekiang by having the Shanghai-Nanking highway surveyed so as to accelerate the completion of these most important roads.

New Road, Nanking.—The Tong-shan modern road at Nanking has been completed and auto bus service on the line has been inaugurated by the Shun Nih Co. with two automobiles.

Chinese Post Office Buying Trucks.—The metropolitan post office at Peking has ordered from a certain French firm more trucks for facilitating delivery of mail.

Auto Bus Service, Anhwei.—Mr. Sze Fong-yee has proposed the organization of an automobile transportation company to operate a service from Anking to Yin-chow by appropriating an amount which was originally raised for building the An-Tze Railway. Road will be built as soon as the capital for the company is secured.

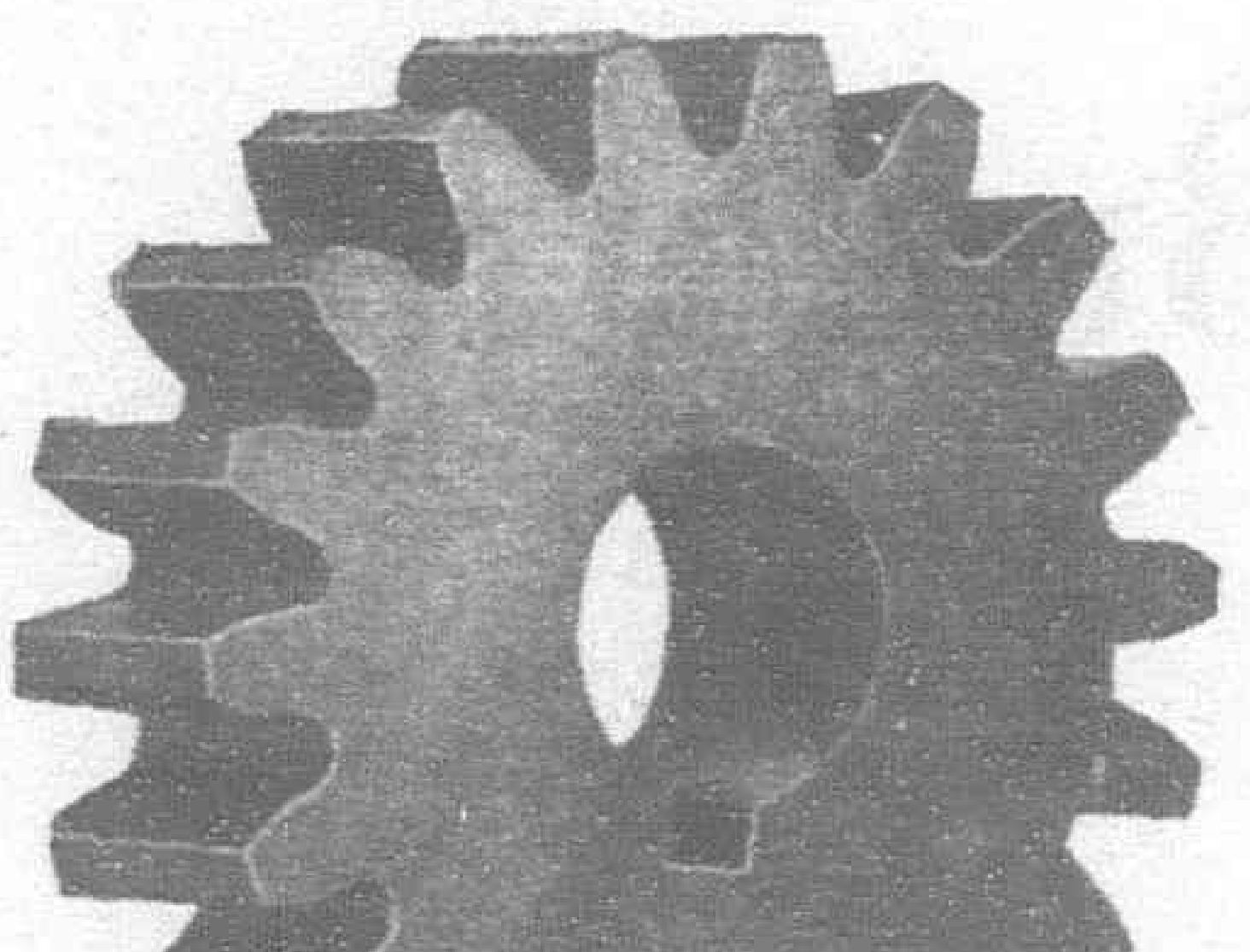
Auto Bus Services, Fengtien.—The petition made by Mr. Yue Chiar-feng for operating an auto bus service between Antung and Dah-ku-shan, Fengtien, is said to have received favorable consideration of the authorities concerned. It is also reported that Mr. Yue has applied to the local officials for running another automobile transportation service in Fengtien, from Antung to Ling-kiang. A special feature of the new enterprise is that auto buses will run over ice between the two points.

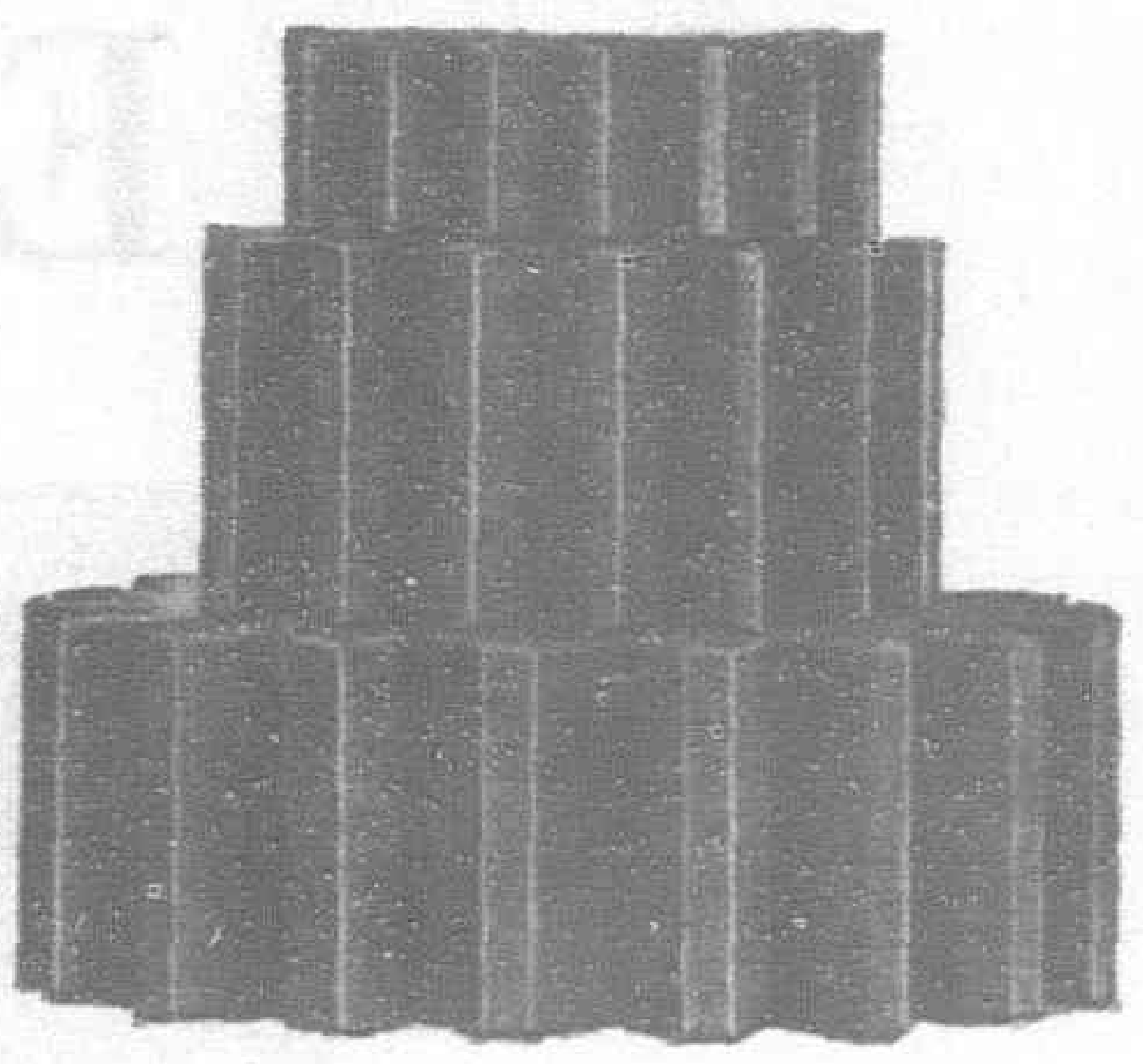
Chefoo-Weihsien Road.—The Chefoo-Weihsien road constructed under the auspices of Chiaotungpu is approaching completion and the ministry intends to offer the completed section, about 500 *li* in length, to the public for running auto bus services thereon with an annual charge of road-repairing fee to be paid to the government. Any Chinese interested may apply to the ministry of communications for the undertaking but as the road lies in Shantung, citizens of that province shall have the preference.

New Auto Bus Co.—The Shanghai-Chuensha Automobile Transportation Co. now being organized at Pootung by Mr. Chu Shih-hsuen has been registered with the ministry of communications and agriculture and commerce.

Chekiang-Kiangsi Automobile Road.—The plan for operating an automobile transportation service from Chekiang to Kiangsi formulated by Mr. Chen Hsu-dong, ex-chief of embankment works department of Haining, Chekiang, has received the approval of the provincial authorities of Chekiang, and subscriptions to the capital of the new company have been invited.

Chefoo-Weihsien Branch Motor Road.—Mr. Chai Fan-teh, chief engineer of the Chefoo-Weihsien automobile road, has received instructions from the ministry of communications to the effect that a branch road from Pien-ping-hsien to Wai-hai, Shantung, will be built. The construction of the road will probably be carried out next spring.





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Construction Work of Pootung Automobile Roads.—After two months of work on the Shanghai-Nanwei automobile road, the section from Chow-chair-doo to San-ling-dong has been completed and it is generally believed that at the end of the year the road will reach Chow-poo. Work on the two cement bridges known as Hung-dah-jao and Sun-chiar-jao has been started. It is expected that service between Chow-chiar-doo and San-ling-dong will be inaugurated within the year, while through traffic on the whole line will be possible by the end of April, 1922.

With regard to another automobile road in Pootung, from Shanghai to Chuen-sha, great progress is also being made in construction work. The capital of the Company has been fully subscribed and surveying from Ching-ning-sze to Yee-chiar-jao completed. Work on two large cement bridges named Mar-chair-pang-jao and Dao-kiu-jao, will soon commence and are expected to be finished next March. The road will have a width of 40 feet except at the most prosperous section from Ching-ning-sze to King-chiar-jao where it will be 50 feet wide.

Shanghai-Taichong Automobile Transportation Co. Ready to Oporate.—The construction of the motor road from Chapei to Lu-tien, about 30 *li* in distance, has been concluded by the Shanghai-Taichong Automobile Transportation Co., and an auto bus service will be inaugurated on January 1st, 1922, with five new buses each capable of accommodating 10 passengers in the first class and 16 in the second class compartment. These cars, of American manufacture, cost about Tls. 4,500 each. A trial service of the new buses will be made shortly, making a round trip to Woosung, passing through Yangtszepoo and military roads.

In addition to the auto buses, the Company will purchase several motor cars for general service.

Soochow-Kashing-Huchow Automobile Transportation Co.—With reference to the Soochow-Kashing-Huchow Automobile Transportation Co. proposed by Mr. Chen Wei-yu with a capital of $3,000,000, it is learned that the following five roads will be built:

(1) Starting from Soochow, running eastward via Kwan-shan and Tai-chong to connect with the Shanghai-Taichong automobile road leading direct to Shanghai.

(2) From Soochow to Kashing via Huchow.

(3) From Huchow to Kwang-teh leading to the Anhwai provincial road.

(4) Starting from Soochow, passing through Chang-zao and Fu-shan-ching leading to the Yangtze River.

(5) Starting from Kashing and ending at Hangchow Bay via Ping-hu and Chapu.

As the first line will connect with the Shanghai-Taichong automobile road, negotiations are being carried on between the two auto bus companies for joint service.

New Road, Nantungchow.—Since the removal of Nantungchow city wall many new structures are being planned.

For facilitating communication, the public works department will build a modern road from Yu-wu-jao to Tsi-fai-tien via Mar-chen-mu connecting with the Chung-hsuan-shan road at Hao-pei.

Chenkiang-Wusih Auto Bus Service.—At a meeting of the promoters of the Chenkiang-Wusih Automobile Transportation Company, it was decided that auto buses would be run on rails to be laid out along the motor road. A set of regulations has been laid down and application for approval and registration made to the local authorities.

Shanghai-Minghong-Nanwei-Tsoling Auto Bus Co.—The Shanghai-Minghong-Nanwei-Tsoling Automobile Transportation Co., under the managership of Mr. Lee Ying-shih, in co-operation with the authorities, has begun the purchase of lands for the construction of motor roads through four districts, aggregating 91 *li* in length. There will be built seventeen re-inforced concrete bridges before June, 1922 when auto bus services will be inaugurated. Construction of the bridge at Tsao-hu-ching with an arch of 30-ft. wide and the one at Chang-chiar-ping with an arch of 20-ft. wide was started on the 8th inst., while the others from Pao-nan to Tso-lin will be commenced on the 18th inst.

Shanghai-Tsoling Auto Bus Co.—While the Shanghai-Mingkong-Nanpoo-Tsoling Automobile Transportation Co. has recently placed an order with Leewoo & Co., a German firm, for ten passenger and freight cars. The former costs Tls. 2,700 each and the later Tls. 2,750 each, and the cars are expected to arrive at Shanghai in April, 1922.

Shensi Auto Bus Service.—General Tsao Kun has promised to set apart twenty automobiles for running a service between Sian and Dung-kwain of Shensi.

Chefoo-Weihsien Motor Road Traffic.—An autobus service has been inaugurated on the Chefoo-Weihsien road as far as to Sha-ho, the western boundary of Yih-hsien, a distance of over 200 *li*, from Chefoo. The section between Sha-ho to Chiar-ho in Cho-yuen-hsien, on which bridges have been completed, will be ready for traffic next spring.

Motor Works Burnt.—Damage estimated totaling about Y.800,000 resulted from a fire in which nine of the factories of the Tokyo Street Motor Car Company at Senjyu in the suburbs of Tokyo were destroyed. About 60 motor cars awaiting repairs and in course of construction were destroyed.

Tractors in the Philippines.—The increase in the use of tractors has been remarkable. In 1917, 4 tractors were sold in the Philippines; in 1918, 6; and in 1919, 597, while during the fiscal year ended June 30, 1920, over 800 were sold. This great increase was largely in consequence of a tractor demonstration held at the government demonstration farm at Alabang in October, 1919, where 10 tractors were tested under the most exacting conditions. As a result of these trials, tractors won a place in Philippine agriculture. It was found that a tractor meeting the conditions should be able to pull three 14-inch plows and should have 12 horse-power at the drawbar always available. Fourteen-inch moldboard plows and 26-inch disk plows were found to be most satisfactory, depending on different conditions of soil. For several years there has been an increasing shortage of draft animals in the Philippines, due to the prevalance of rinderpest among the carabaos, and for that reason it has been necessary to find another means of motive power. This accounts in part for the general increase in the use of tractors, and while there are certain uses for which the carabao is indispensable, yet the indications are that the tractor will soon supersede the carabao to a very large extent in supplying motive power.

Roads in Heung Shan.—Mr. Wu Tit-sing, the new magistrate of Heung Shan, has proposed to open the public roads in the city. Ten surveyors were employed from Canton to make surveys.

Canton Roads.—The survey of a public road from Canton to Tsing-Sing district, which was proposed by the public road bureau, is now finished says the *Canton Times*. The road will start from Sha-hoo, outside the east gate, *via* Inn-tong and through the foot-path of the white cloud mountain directly to the district of Tsing-sing. The road line is estimated to be more than 60 miles. The work will begin soon.

The public works department issued an announcement that several maloos will be opened in Saikwan in order to facilitate communications in that part of the city.

Starting from the western end of Sap Sam Hong Street, a 40-ft. maloo will be built to the eastern end of the street with a 10-ft. sidewalk on each side of the maloo. Another maloo of the same width will connect the west bund and the present Sap Sam Hong Street. The Wing Yang Street and the Tak Cheng Street will be widened to 20 and 24 feet respectively.

The above schedule has been approved by the executive council of the municipality and P.W.D. officials are surveying in these places.

Road Construction, Kashing.—Mr. Kao Shu-li, chairman of the chamber of commerce at Kashing, Chekiang is raising a fund for constructing a modern road along See-hu Street from East City Gate to North Gate.

Road Construction: Woosung.—The Woosung port improvement work bureau has officially announced that roads along the Woosung Creek and Sze-dong starting from the station of the Shanghai-Woosung railway on the east and ending at Tsi-shun-an Bridge on the west, which have been surveyed and for which tenders have been called, will be soon constructed.

Auto Bus Service, Harbin.—An automobile service from Harbin to Ching-hua-chuen viâ Shan-sing, Chiar-mow and Sze-foo has been inaugurated.

Automobile Co., Increases Capital.—The Shanghai-Nanway Automobile Transportation Co. is now being organized, has announced the increase of its capital to $500,000 as authorized by the committee to extend the proposed service.

Automobile Road, Kiangsu.—Messrs. Wang Mow-ting and Yao Pao-teh, gentry of Zingkiang, have planned to build a modern road between Zing-kiang, Kiangsu, from Pai-yu-kong-kow, 18 *li* in distance, and operate a auto bus service. A meeting was held in the local chamber of commerce and a fund of $3,000 has been so far obtained.

North Automobile Co.—Auto bus service of the Pei Fong or North Automobile Transportation Company was inaugurated between Sao-tsian, Anhwei, and Hsuchow, Kiangsu, viâ Yung-chen and Kwanteh in Honan and Bao-hsien in Anhwei. The fare from Sao-tsian to Hsuchow is $6 for a single journey.

Provincial Roads, Kwangsi.—Reports from Wuchow state that the Kwangsi provincial road construction bureau consisting of four departments has been formed with Mr. Soo Wu-yah as director. According to the schemes formulated by the bureau, the road from Mong-kiang to Kweiling will be built first, as it is a highway, very important in military service. A fund will be appropriated for preliminary servey of the line.

Paved Road at Nantungchow.—At Hao-nan, Nantungchow, a modern road, 12 *li* long, has been completed, and inauguration ceremony was celebrated on December 1, 1921.

Heilungkiang Auto Bus Line.—From Heilungkiang to Heiho, a distance of about 800 *li*, an auto bus service is operated every winter when the bandits are most active. The company is preparing to resume business this winter.

Canton Motor Bus Line.—The motor bus line in Canton is operating 15 trucks, equipped with passenger bodies of a Chinese-make and each truck hauls a trailer which is similarly equipped. One unit, consisting of a truck and trailer, has a seating capacity of 70 persons.

Canton is a city of over 1,000,000 population, and, until only a year or two ago, when reconstruction work was begun, there were only 15,000 feet of road in that city sufficiently wide to accommodate wheeled traffic. That stretch of road was along the water front. In 1919 work was started to tear down the old city wall, build a modern road in its place, and remodel the city streets on a more modern plan. With this work recently completed, the new motor bus service was put into operation.

Regular fast service, 15 hours a day, to any part of the city is now given the populace of Canton.

The Shanghai-Taichong Long-distance Automobile Company will commence its service from Chapei to Lutien in January 1922.

Motor Service, Peking.—Hu Teh-kung, of Peking, has petitioned for permission to inaugurate a passenger and goods motor service between Nanyuan and Peiyuan, Peking.

The Yue K'ang Transportation Company, Ltd., has been organized by Mr. Yuan Chi-wu with a capital of $100,000. Its head office is at Hsuchow, Kiangsu. The ministry of agriculture and commerce has been petitioned for registration.

Chinese Automobile Company.—The Yangtze Machinery Works has turned out an automobile, which, when compared in quality and workmanship, is stated to be in no way inferior to foreign makes. Patent rights have been obtained from the ministry of agriculture and commerce. The company intends to enter into competition for the China market with other manufacturers.

Harbin Motor Truck Service.—The Russo-Asiatic Bank, Harbin Pristan, whose telegraphic address is "Sinoprist," notifies that orders of every description for handling and forwarding of goods by rail will be accepted at its counters. The bank has godowns situated in various parts of the city for storage of all kinds of merchandise and cellars, specially arranged for storage of wines. Delivery of grain for storage can be made at the Anda Station of the C.E.R.. The transportation of goods within the boundaries of the city is effected by means of motor trucks.

Road Construction, Kwangsi.—A sun of $60.000 has been appropriated by the magistrates of Nanning and Pingchow, Kwangsi, for the building of a road between the two cities.

INDUSTRIES

The Tung Hua Cotton Mill at Ward Road, Shanghai, a Japanese enterprise, will erect a second mill at the northern side of its premises, with machines imported from the United States.

New Arsenal, Mukden.—The Mukden arsenal was originally intended to have a capital of $4,000,000, of which one-half was to be provided by Fengtien and one quarter each by Kirin and Heilungkiang, but as it is to be extended the amount is insufficient. General Chang has now decided that another four million dollars are needed, of which one-half is to be raised by Fengtien and the other half by Kirin and Heilungkiang.

Fengtien Arsenal.—On the occasion of a banquet given to the managers of leading Chinese banks at Harbin by the tuchuns of Kirin and Heilungkiang, General Sun Li-chen and General Wu Tsing-sung stated that one of the important objects of their visit to Harbin was to arrange for the organization of an arsenal at Lien-shan-wen, Fengtien, as proposed by Marshal Chang Tso-lin. As the scheme will call for an enormous expenditure, they asked for assistance of the local financiers. Fifty per cent. of the fund required is to be raised from Fengtien, thirty per cent. from Kirin and twenty per cent. from Heilungkiang.

New Iron Works.—The ministry of agriculture and commerce has granted registration to the China Iron Works, Ltd.

Flour Mill, Shanghai.—The Shun Hua Paste Manufacturing Co. has announced an increase of capital by one million dollars, to be used for erecting a flour mill at Sao-shiao-doo, Shanghai. The factory building has been completed and machinery installed.

Glass Factory, Mukden.—A glassware manufacturing company is under organization at Si-kwan, Mukden, by Mr. Fu, an experienced expert in that line.

New Dyeing and Weaving Co., Shanghai.—The Sing Hua Dyeing and Weaving Factory, promoted by Mr. Yih Ting-sing about three years ago, has now completed its preparatory works. The factory building is located at Chapei and the office is at Lao-cha-jao. When machinery ordered from abroad has been installed, operation will commence.

Shanghai Soap Factories.—There are more than thirty soap and candle manufacturing companies in Shanghai established by Chinese.

A New Printing Company, Hangchow.—The Chekiang Printing Company, capitalized at $50,000, is being organized at Hangchow by Messrs. Jue Sun-pai, Chu Hung-tan, Chang Ju-chuen, Kao Tze-ting and Chang Mong-lin.

New Mill, Nantungchow.—The construction of the Dah Sun Cotton Spinning and Weaving Factory, mill No. 8 at Kiang-chiar-jao, Nantungchow, is making good headway. The structure is of re-inforced concrete. Machinery, spindles and other equipments ordered from abroad have arrived.

Phosphorus Factory, Tsinan.—The Shantung Agricultural Association at Tsinan has proposed the organization of a phosphorus factory to supply materials to Chinese match factories. A meeting was held by the association and a number of local merchants interested.

Textile Plant Expands.—The Dah Sun Textile Plant at Tang Cha, Nantungchow, has decided to increase its capital by $22,000 for purchasing additional machinery and expanding its factory building.

Silk Mill, Chinkiang.—The Tan Hua Silk Mill to be run by electric power is being organized at Tan-yang, Kiangsu, with a capital of $100,000. Mr. Tan Tsuh-chung is appointed as general manager and Mr. Kwan Wei-way as assistant manager and engineer-in-chief. Its factory building is in the course of construction and operation is expected to commence in next spring.

New Fishing Co., Snanghai.—The Kiangsu and Chekiang Fishing Co., Ltd., is being organized at Shanghai by Messrs. Lee Sui-kiu, Hsu Han-nan, Woo Tseng-ching, Chao Sing-ming, etc. It is to have a capitalization of $2,000,000, divided into 100,000 shares of $10 each.

Industrial Development of Fukien.—Rapid improvement has been made in Fukien's industry during recent years, and a number of industrial plants organized. Among these, the largest is the Fukien Industrial Company at Foochow, manufacturing alcohol and leather. The factory is equipped with up-to-date machines and stocked with a large quantity of raw materials. At the alcohol plant, there is an artesian well having a depth of 270 feet, capable of supplying 2,000 piculs of water per hour. The alcohol is made from potatoes.

Kien Hua Match Factory, Lee Hua Silk Filature, Mei Lee Soap Manufacturing Co., Tseng Chung Cloth Weaving Mill and Foo Hua Factory are also noteworthy, their products enjoying a good sale on the market.

Paper Mill, Kirin.—A petition has been submitted to the ministry of agriculture and commerce by Mr. Pao for organizing the Shun Ling Paper Mill at Kirin.

Beet Sugar Refining Co., Manchuria.—The beet sugar plant at Foolan, Manchuria, run by Chinese officials and merchants since its re-organization, has made great improvement under managership of Mr. Yue Ching-dang.

Cigarette Factory, Shanghai.—The Nan Yang Bros. Tobacco Company propose to erect a new factory. It is reported that the company has purchased more than 20 *mow* of land at Yangtszepoo for this purpose.

Paper Manufacture, P.I.—The office of the bureau of foreign and domestic commerce of the United States in Manila has been conducting an investigation of the possibilities of paper manufacturing industry in the Philippines. It is believed that such an industry if efficiently managed, can count not only on the local demand, but also on China, whose consumption of imported paper has been increasing yearly.

Cold Storage, N.E.I.—The East Java Cold Storage Company, recently formed, will shortly start business at Sourabaya and Samarang. The company will deal principally in Australian meats, game and fruit.

Cotton Spindles in Japan.—An investigation made by the Japanese Cotton Spinners' Association revealed that on August 1 there were 3,963,528 spindles (3,914,158 ring spindles and 49,370 mule spindles) installed in the mills of the companies belonging to the association, an increase of 149,948 spindles over the number at the end of 1920. In yarn-twisting machines the spindles amounted to 51,791, showing an increase of 1,208 machines. The number of spindles of the companies which do not belong to the association is about 160,000 spindles, which will make, if added to the above total, more than 4,000,000 spindles. The companies which are not members of the association are mainly making fine yarns and calico yarns, and have an output of about 5,000 bales a month.

Development of British Indian Sugar Industry.—India has an annual consumption of 748,544 tons of foreign sugar, with a production of refined sugar of only 177,569 tons. It is obvious that there is ample scope for many times the number of factories now working in India. The prospect before the Indian sugar industry is very hopeful, as it can choose the most favorable parts of the country for supply for many years to come, and with the increased duty on foreign sugar, coupled with heavier freight and handling charges, it is considered that it would be well if capitalists devoted their time and attention more and more to developing the industry on a sound and scientific basis. There is ample scope, and the rise in the cost of production throughout the world, both of raw material and of the finished product, has told heavily in India's favor.

Heating Power House, Tokyo.—Establishment of a power house to supply heating systems in Tokyo is being considered by Mayor Goto who has called a German engineer to study the fuel problem which hitherto has prevented installation of the system. The engineer is experimenting with lignite as a fuel for generating gas and if the experiments are successful the establishment of the power house will not be long delayed, it is said.

Agricultural Machinery, F.E.R.—The Blagoveschensk department of industry has undertaken to carry out the extensive orders of the central government for the construction of agricultural machines and implements. To fulfil the orders the Chepurin and Afanassiev factories will be run full blast.

ARSENALS

Site of the Mukden Arsenal.—The agricultural experiment station at Mukden has been chosen as the site for the Fengtien arsenal. The architects' drawings for the new buildings have been submitted to General Chang Tso-ling for approval. Although tenders for constructing the arsenal will be invited next spring, a fund of $3,000,000 to meet construction cost having been appropriated, it is reported that Mr. Dac Lee-tsing, director of the Mukden arsenal, has sent a representative to Sweden to purchase machinery for manufacturing munitions. The light railway to connect the arsenal with the main line will start from the Peking-Mukden Railway station passing through Hsiao-Pei-pien-men, Dah-pei-pien-men and Hsiao-tung-pien-men direct to the arsenal. Mr. Foo Pao-kong has been appointed to take charge of the work which will be probably started within the year.